INCREASING LEARNING COACH INVOLVEMENT TO SUPPORT CULTIVATING STUDENT ENGAGEMENT IN K-12 ONLINE CLASSROOMS

by
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Abstract

Students in K-12 online classrooms demonstrate lower levels of achievement in both reading and mathematics than their face-to-face counterparts, and notably low levels of engagement are a contributing factor. The development of the field of K-12 online learning occurred so rapidly that the research and establishment of best practices have been slow to catch up. The school under investigation relies on a three-legged model in which the teacher, student, and an in-person learning coach play pivotal roles in ensuring student success. However, findings from the needs assessment indicated that learning coaches were often less involved than the school assumed, with students as young as fifth and sixth grade unsupervised or left home alone to attend school. Moreover, while teachers were supported with ongoing professional development once they assumed their role as an online educator, extant research suggests that there is often little support for teachers for involving learning coaches. The intervention provided professional development to teachers to cultivate their practices in inviting learning coach involvement with the goal of increasing student engagement. A quasi-experimental pretest-posttest convergent parallel mixed methods research design measured changes in teacher practices in inviting learning coaches after teacher professional development designed to increase learning coach involvement was implemented. Collection of qualitative data included a focus group with teachers and open-ended questions for both teachers and learning coaches. While quantitative findings indicated no changes in teacher practices as a result of the intervention, qualitative findings indicated teachers were making effective changes to increase learning coach involvement with apparent changes in the interactions between teachers and learning coaches.

Keywords: K-12 online learning, student engagement, learning coach involvement, teacher practices, professional development, virtual professional learning communities

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Dedication

This dissertation is dedicated to my daughters. I would have been lost without the recipe for success my youngest daughter gave me early in the program: 10 ounces of determination, 2 cups of peace and quiet, 3 tablespoons of hard work, a good night's sleep, and 7 gallons of coffee. Thank you for your patience, support, humor, and most importantly for helping me to keep perspective.

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Executive Summary

Background

The school that serves as the context for this study, located in one of the largest states for online charter school enrollment across the country (Gill et al., 2015), is sponsored by a large for-profit educational organization. The for-profit organization and school representatives engaged with the state Department of Education for five challenging years before receiving the charter for the school. In July, 2017 the charter was granted, and the school opened about six weeks later in the fall of 2017. The needs assessment was conducted in the spring of the first year of operations while the policy and program continued to develop. At the time data were collected for the needs assessment, there were 32 teachers in the school. The school experienced rapid growth in the first three years of operations, and by the conclusion of the intervention, there were 125 teachers employed by the online charter school.

The school relies on a three-legged model that includes the teacher, student, and an in-person learning coach to support students' success. The majority of in-person learning coaches are parents (90%); however, parents are frequently unaware of their role or responsibilities while working with students in online classrooms (Hasler Waters & Leong, 2014; Smith, Burdette, Cheatham, & Harvey, 2016). Typically, the parental role includes helping students become organized and providing instruction, motivation, and support (Borup, Graham, & Davies, 2013b; Curtis & Werth, 2015; Hasler-Waters, Borup, & Menchaca, 2018). While parental learning coaches often assume the role of managers and guides, teachers serve as experts and facilitators (Hasler Waters & Leong, 2014). Parents commonly seek guidance from the school and teachers regarding how to help and support their students (Baker, Wise, Kelley, & Skiba, 2016).

Problem of Practice

Student achievement in both reading and mathematics is notably lower in elementary and secondary online classrooms as compared to their brick and mortar peers (Ahn & McEachin, 2017; Carnahan & Fulton, 2013; CREDO., 2015; Gill et al., 2015; National Alliance for Public Charter Schools, 2016). Low levels of student achievement often correlate with lower levels of engagement (J. A. Fredricks, Blumenfeld, & Paris, 2004; Henrie, Halverson, & Graham, 2015). The correlation between engagement and achievement is particularly relevant in online schools where student engagement was identified as the greatest challenge by principals (no N identified) nearly three times more often than other issues (Gill et al., 2015; National Alliance for Public Charter Schools, 2016). Further, low student engagement is directly reflective of the inherent structure of online education (Hung, Hsu, & Rice, 2012; Zweig & Stafford, 2016). When considering student engagement in online classrooms, the Adolescent Community of Engagement framework suggests that the three criteria of teacher engagement, parental engagement, and peer engagement directly influence the level of engagement of the focal student (Borup, West, Graham, & Davies, 2014). This investigation aimed to support teachers in increasing parental learning coach involvement, with the intent of more distally increasing student engagement and achievement in online classrooms.

Needs Assessment Findings

The needs assessment included data collected from teachers regarding their perception of student engagement (Angelino, Williams, & Natvig, 2007; J. A. Fredricks et al., 2004; J. Fredricks et al., 2011; Kim, Park, Cozart, & Lee, 2015; Richardson & Newby, 2006), their preparation for teaching online (Archambault et al., 2016; Kennedy & Archambault, 2012; Kennedy, Cavanaugh, & Dawson, 2013; Rice & Dawley, 2009), and student interactions within

the online classroom (Borup, Graham, & Davies, 2013a; Moore, 1989; Roblyer & Wiencke, 2004; Thurmond & Wambach, 2004). Pre-existing data from the school revealed that approximately 26% of students (about 325 students) were receiving administrative support for demonstrating low levels of engagement, underlining the significance of this problem within the context.

While the school has an ample onboarding process and ongoing professional development opportunities built into the weekly schedule, nearly half of the teachers surveyed indicated that they could benefit from more professional learning opportunities and training specifically focused on online instruction. Further, 87% of teachers noted that engaging learning coaches was a challenge either "to some extent" or "to a great extent." Additionally, qualitative findings from both teachers and administrators suggested that they recognize the importance of family support as imperative for student success. However, results also indicated that learning coaches were less active than anticipated and expected by the school with students as young as sixth and seventh grade left home alone to attend school independently.

Research Purpose and Objectives

Developing teacher practices and fostering collaboration between teachers and learning coaches was focal to this intervention.. The study included four research questions, two process, and two outcome questions. The process questions focused on implementation and teachers' experience and response, and the outcome questions evaluated changes in teacher practices and changes in interactions between teachers and learning coaches. All teachers were required to participate in the PD sessions as part of the ongoing PD provided by the school. Consequently, all teachers were invited to participate in the study. The study was fundamentally a quasi-experimental one-group pretest-posttest convergent-parallel mixed-methods assessment of the

teacher participants. However, there were additional data collection points mid-intervention, including a teachers' experience survey and a focus group, as well as a post-intervention survey of open-ended questions for learning coaches.

The intervention was designed in two phases, the first of which was a series of face-to-face professional development sessions that started in August before the start of the school year and extended to early November. The second phase was a series of 1-hour virtual professional learning community (PLC) sessions that began in December and continued through the end of March. There were two virtual PLC sessions for all teachers, two for elementary teachers, two for middle school teachers, and two for high school teachers.

Findings

Data related to the first research question revealed that implementation of the intervention occurred as planned, and that the outcome measures accurately reflected the results of the intended intervention. The second research question focused on the teachers' response and experience with the professional development sessions. When considering the mid-intervention teacher response as reported by a subscale of the Impact of Teacher Professional Development (ITPD) survey (McChesney & Aldridge, 2018), the highest levels of agreement were with having positive memories of the PD (64% "agree" and "strongly agree") and with the usefulness of the PD sessions (54% "agree" and "strongly agree"). When considering qualitative findings from the focus group, which also occurred mid-intervention but closer to the conclusion of the intervention, teachers reported overall satisfaction with the PD. Further, teachers indicated that they appreciated having time to collaborate in the virtual PLCs.

The third research question focused on the extent to which teachers were able to augment their teaching practices after participating in the PD to increase learning coach involvement. The

pretest-posttest survey of invitations to learning coaches survey resulted in a pretest mean of 3.07, a posttest mean of 3.17, and a mean difference of 0.1. Further, the p-value was 0.38, which was significantly higher than alpha, which was 0.05. The larger value for P indicates there were no significant changes from pretest to posttest. However, there were two questions related to the frequency of communication of skills and activities that were occurring within the online classroom that reflected a pattern that may be worth investigating further.

When considering the ITPD subscale regarding teacher learning outcomes post-intervention, teachers reported the highest levels of agreement with having learned new things (48% "agree" and "strongly agree") and successfully applying the content from the professional development into their classroom practices (48% "agree" and "strongly agree"). Additionally, qualitative findings revealed codes such as teaching shifts, using technology, and new strategies, which culminated in the theme of refining practices. Teachers indicated that they were using several new strategies and platforms to connect with learning coaches, including forming "real relationships" and shifting how live classroom sessions operated to require active participation from learning coaches as well as students. Consequently, while there was inconsistency in quantitative and qualitative findings, the lived experiences of the teachers in the focus group depict teachers implementing changes to their teaching practices.

The fourth research question focused on the changes in interactions between the teachers and the learning coaches. Qualitative data from the teachers indicated that they were beginning to build a community through frequent communications, increasing communications and interactions, and creating "real relationships." Further, they noted that learning coaches were more engaged passively and actively and that some learning coaches were "sometimes engaged, sometimes not" (focus group, Teacher 2). Teachers also indicated that they were primarily

communicating with learning coaches through phone (17%) and email (22%), yet there were several other methods of communication being used as well.

After the intervention, there were approximately 1860 students enrolled in the school, and 408 learning coaches responded to the survey, resulting in 22% consenting to participate in the study. While the survey included open-ended questions, many of the responses were one-word responses or short phrases. Consequently, quantitizing the qualitative data resulted in 58% reporting no changes in interactions, 18% identified changes, 6% indicated changes as a result of the COVID-19 pandemic, and 18% did not answer the question. Of the responses that indicated there were no changes, many of them were positive about what was occurring already: “No the teacher has always been available and quick to respond.” Those who identified changes primarily indicated positive changes, “Yes, they are becoming more involved with us.” The study offers support that teachers were beginning to implement changes in their practices of involving learning coaches and that the interactions between learning coaches and teachers were improving in quality and increasing in frequency.

Chapter 1: Literature Review

During the past few decades, technological transformations in education have resulted in the rapid growth of online learning (Ahn, 2011; Center for Research on Educational Outcomes [CREDO], 2015; Gill et al., 2015; Kennedy & Ferdig, 2018; Watson, Murin, Vashaw, Gemin, & Rapp, 2012). With the creation of the Internet in the early 1980s and the establishment of the first charter school in Minnesota in 1991 (Ahn, 2011; Murphy & Shiffman, 2002), the inevitable development of cyber charter schools followed shortly after with the first opening in 1994 (Waters, Barbour, & Menchaca, 2014). Just as K-12 online learning surged in recent years, cyber charter schools have likewise grown exponentially (Gill et al., 2015). However, this expansion of online learning has often occurred without the policy, practice, or research needed to guide development (DiPietro, Ferdig, Black, & Presto, 2010; Kennedy & Archambault, 2012; Rice, 2009). Consequently, students in online charter schools have shown a lower rate of academic growth in both mathematics and reading, as well as a higher rate of mobility than their brick and mortar peers (Ahn & McEachin, 2017; Carnahan & Fulton, 2013; CREDO, 2015; Gill et al., 2015; National Alliance for Public Charter Schools, 2016). Switching schools more often could result in lower rates of academic growth. Research has shown multiple factors contribute to the low level of academic achievement, including teachers' challenges in engaging students, students' unfamiliarity with the online learning communication processes, students' lack of time management skills, students' inability to work independently, and both teachers' and students' inexperience in learning in a non-traditional way (Kahn, Egbue, Palkie, & Madden, 2017; Lowes & Lin, 2015).

The physical and transactional distance between individuals when learning online can make it difficult to engage in interpersonal interactions, which is an important factor in

increasing student motivation and success (Borup, Graham, & Davies, 2013a). Learning is a social and collaborative process that relies upon the societal and academic cultures as central aspects of development (Alexander, Schallert, & Reynolds, 2009; Bandura, 1986; Vygotsky, 1978). According to Vygotsky's (1978) theory of the zone of proximal development, individuals can gain support from a more knowledgeable person to proceed to a higher level of development. Through this process, the individual begins to gain independence with activities that previously required support, furthering the acquisition of new knowledge. Traditionally, teachers have a broader knowledge base and are the experts in a position to guide students through to acquiring greater knowledge. However, within K-12 online education, technology mediates social communications, with face-to-face interactions often occurring only on occasion. The role of technology potentially changes the dynamics with regards to gaining academic independence within the online classroom. The following section discusses the transactional distance inherent in distance learning.

Transactional Distance

Within distance education, the separation between the learners and their instructors can impact the learning experience (Moore, 1993). Communication and psychological barriers define the transactional distance that can exist within distance and online learning, and bridging these barriers often requires individual consideration and continuous effort. The theory of transactional distance suggests that there are three components to online learning that reside on a continuum. These components include dialogue, structure, and autonomy (Moore, 1993). Dialogue refers to the positive interactions that occur between teachers and students, which are intentional and constructive. Establishing dialogue within an online classroom is the responsibility of the teacher when they are crafting the structure of the class. The structure of the program refers to the course

design and the implementation of technology within the class. Dialogue and structure have an inverse relationship with the level of autonomy required by the student. This inverse relationship indicates that less organization in the course structure and less interaction between individuals in the online learning environment requires more independent learning. Identified by both the students' attitude regarding learning and their ability to actuate learning independently (Dickinson, 1995), autonomy can potentially have an impact on their ability to engage in learning. The next section further discusses independent learning as it relates to student engagement in online education.

Independent Learning

The shift from teacher control to increasing levels of autonomy that students experience when the separation between teachers and students requires communications to occur through a distinct medium, such as print or electronic, characterizes independent learning in distance education (Moore, 1973; Zhong, 2018). As a result of the distance between the teacher and student, the relationship between the teacher and student shifts such that the student assumes a higher level of responsibility in planning, execution, and evaluation of their learning process (Moore, 1973; Zhong, 2018). Considering the autonomy of learners is complex as it is often dynamic and dependent upon both personal and contextual factors (Zhong, 2018). The advent of online learning resulted as a means to provide successful students with more educational opportunities (Barbour & Mulcahy, 2008; Carnahan & Fulton, 2013). Students tended to be highly motivated, successful independent learners in their traditional brick and mortar schools. Consequently, these students were well positioned when transitioning to online learning opportunities. However, as the industry of elementary and secondary online education has

expanded, students from a wide variety of backgrounds and abilities have been increasingly attracted to this school option (CREDO, 2015; Gill et al., 2015).

As less academically precocious students began to enroll in online schools, more structure and interaction was needed to support learners. This need for additional structure and interaction is especially true for younger students, as age correlates with their ability to engage cognitively within the online learning environment (Shea & Bidjerano, 2009). Consequently, while independent learning can offer advantages, such as individual pacing or additional educational options, online learning increasingly needs to reflect the social and collaborative aspects that are inherent to the learning process (Bandura, 1986). Moreover, elementary and secondary students need support and guidance through the learning process to acquire new knowledge and skills (Vygotsky, 1978). Providing students with an environment that offers opportunities for interaction is important to their academic development and success as students (Alexander et al., 2009; Bandura, 1986; Vygotsky, 1978). Autonomy or independent learning can potentially impact the level of engagement of students within the online classroom as well, with younger students in online classes often requiring more structure and interaction to support cognitive engagement (Shea & Bidjerano, 2009). The next section discusses the connections that support online students' development and learning processes.

Connectivism in Online Learning

Instead of the traditional cognitive concept of learning occurring within the individual, Siemens (2005) suggested a theory of connectivism which posits that learning can reside outside of the self, with the student focusing on the connections that support the acquisition of further knowledge. Connectivism creates the foundation for several theoretical frameworks that aim to explain the learning process that occurs within online learning environments. The Community of

Inquiry (CoI) framework, for instance, established initially from constructivist theory before the establishment of connectivism as a theoretical framework, is both connected with constructivism and aligns well with connectivism. The CoI framework considers the learner's connections through the establishment of three essential components to supporting the online student: cognitive presence, social presence, and teacher presence (Akyol & Garrison, 2008; Shea & Bidjerano, 2009). According to the CoI framework, attending to each form of presence provides students with a meaningful learning opportunity (Akyol & Garrison, 2008; Garrison & Cleveland-Innes, 2005; Hawkins, Barbour, & Graham, 2011; Shea & Bidjerano, 2009).

Adding to the challenges that result from the physical distance between students in an online classroom, establishing a connected teacher presence can be challenging as pre-service teacher preparation programs typically focus on readying teachers for traditional brick and mortar settings (Archambault et al., 2016; Kennedy & Archambault, 2012). Experiential learning opportunities for many teachers occur through pre-service teacher preparation, and the majority of pre-service teaching experiences occur in brick and mortar settings. Not adequately prepared for online teaching, many online educators consequently struggle with the use and implementation of different teaching tools and strategies and uncertainty with how best to connect and engage students in an online setting (Archambault et al., 2016; Hawkins et al., 2011; Hawkins, Graham, & Barbour, 2012; Kennedy & Archambault, 2012; Lochner, Conrad, & Graham, 2015). When teachers are challenged by how to connect and engage with students within online classrooms, the transactional distance may increase, thereby making it more difficult for students to engage in learning. This next section defines student engagement in online classrooms.

Student Engagement in Online Learning

Historically examined in brick and mortar schools, student engagement has multiple definitions in research, which has caused inconsistency across investigations (Taylor & Parsons, 2011). Student engagement is multi-faceted, with behavioral, emotional, and cognitive aspects contributing to overall engagement (Fredricks, Blumenfeld, & Paris, 2004). In this conception of student engagement, demonstration of behavior occurs through participation, emotion appears through interactions with peers and teachers, and cognition happens based on the level of investment made in rising to the challenges of learning (Fredricks et al., 2004). While these definitions are generally appropriate for online students, reassessment of some of the applications of key terms is necessary.

The online learning environment is mediated by technology, thereby changing the nature of learning and creating a potential for an increased transactional distance between individuals (Moore, 1993). Research has demonstrated that interactions within an online learning environment are important in establishing a community (Akyol & Garrison, 2008; Borup, Graham, & Davies, 2013a; Borup & Stevens, 2017; Davenport & Henry, 2007), and a sense of community is significant to student engagement and success (Curtis & Werth, 2015). Facilitating social interactions and a sense of community is particularly impactful for establishing affective engagement within online classrooms, yet also influences the level of cognitive engagement. Cognitive engagement depends directly on the ability of teachers to facilitate the sense of community online, which allows for students to be comfortable as they engage in the learning process.

Additionally, teachers can experience the effects of increased transactional distance in an online environment as well and can consequently feel disconnected from the learning community

(Hawkins et al., 2011). Online teachers frequently teach from home, isolated from students and fellow teachers, and can feel as though "everyone is their own island" (Hawkins et al., 2012, p. 137). Teachers are also frequently unprepared for teaching in an online setting with little or no preservice education specific to online classrooms (Archambault et al., 2016; Kennedy & Archambault, 2012). This lack of preparation for teaching online can further confound the challenges of connecting with students and colleagues within a virtual school.

However, while there are barriers to creating a cohesive community within the online classroom, redefining behavioral engagement is essential for understanding and observing student engagement levels within the online class. Traditional definitions of participation, or defining attendance by seat time, is not a meaningful measurement for online students who frequently learn from home (Archambault, Kennedy, & Bender, 2013). Data mining the online learning system can provide information regarding the duration and frequency with which students log into their classrooms. However, measuring the time spent in the online learning system does not always correlate with learning or the completion of tasks, as students can log into class and walk away from their computer or play a game. Further, students may spend time reading or working on homework without being logged into their classrooms. Consequently, one definition of online engagement suggests that to enhance online learning, increasing participation inside and outside of the online classroom is essential (Hrastinski, 2009).

Additionally, it is important to consider the distinction between passive and active engagement in online classrooms. While learning is typically a combination of the acquisition of new knowledge and participation in course work, often passive members of the community observe and perhaps acquire new information, but do not participate in live sessions or discussions (Smith & Smith, 2014). Further, students demonstrating active engagement can adapt

well to the online classroom, have internal networks within their courses and have developed strategies to connect with others, attend live synchronous sessions, and are highly motivated and capable of overcoming barriers (Milligan, Littlejohn, & Margaryan, 2013). For this investigation, active engagement defines student engagement within online classrooms, in which students are both acquiring new information and participating in both individual and collaborative classroom activities.

Problem of Practice

Research suggests that the overall level of achievement in both reading and mathematics of students in online learning environments is lower than that of their traditional brick and mortar counterparts (Ahn & McEachin, 2017; Carnahan & Fulton, 2013; CREDO., 2015; Gill et al., 2015; National Alliance for Public Charter Schools, 2016). Moreover, low student engagement levels correlate with remediating low levels of achievement (Fredricks et al., 2004; Henrie, Halverson, & Graham, 2015). Further, in a national assessment of virtual charter schools, principals (no N reported) identified student engagement as their greatest challenge nearly three times more often than other issues (Gill et al., 2015; National Alliance for Public Charter Schools, 2016). Researching the factors that contribute to low levels of student engagement in K-12 online learning is potentially an important foundational step in increasing student engagement and the effectiveness of K-12 online classrooms. The problem of low student engagement, inextricably woven with the inherent structure of online education (Hung, Hsu, & Rice, 2012; Zweig & Stafford, 2016), is the focus of this investigation.

Conceptualizing Online Student Engagement

The conceptual framework that guides this research, depicted in Figure 1.1, reflects the factors of school choice, student achievement, online instruction, and the learning community.

Students' prior school experiences, non-academic motivations, and increased course choices are important considerations regarding opting to learn online. Within this diagram, student achievement has a reciprocal relationship with student engagement, with the level of parental involvement, cognitive presence, and students at risk of failing school important underlying issues (Akyol & Garrison, 2008; Lewis, Whiteside, & Garrett Dikkers, 2014; Repetto, 2018; Roblyer, Davis, Mills, Marshall, & Pape, 2008; Shea & Bidjerano, 2009). When considering the reciprocity in the relationship between student engagement and student achievement, Roblyer et al. (2008) suggest that previous performance, in the form of student grade point average, is the primary student characteristic that predicts future successes. However, online learning often serves as a means for students to recover credits that they did not earn in their brick and mortar schools. Consequently, students often select online learning because they have not been successful in their brick and mortar school, and they are seeking an alternative educational opportunity. Online learning offers unique opportunities to students at risk of dropping out or being unsuccessful academically through flexibility in scheduling and individual consideration within the online classroom (Repetto, 2018). The previous educational experiences and challenges, however, can also potentially influence their ability to engage and achieve within the online context. Alternatively, students who have demonstrated previous success may feel encouraged and positive about their learning experiences, and therefore be more engaged.

Establishing a cohesive learning community relies upon the social presence within the online classrooms, the interactions with peers and the teacher, and the extent to which independent learning occurs. Online instruction as a factor depends upon the preparation provided to the teacher to support their practice of online teaching, their presence within the classroom, and the structure and design of the online program. Roblyer et al., (2008) indicate that

that environmental consideration, such as providing structure and soliciting active involvement initially, were predictors of success which further supports the importance of engaging students early.

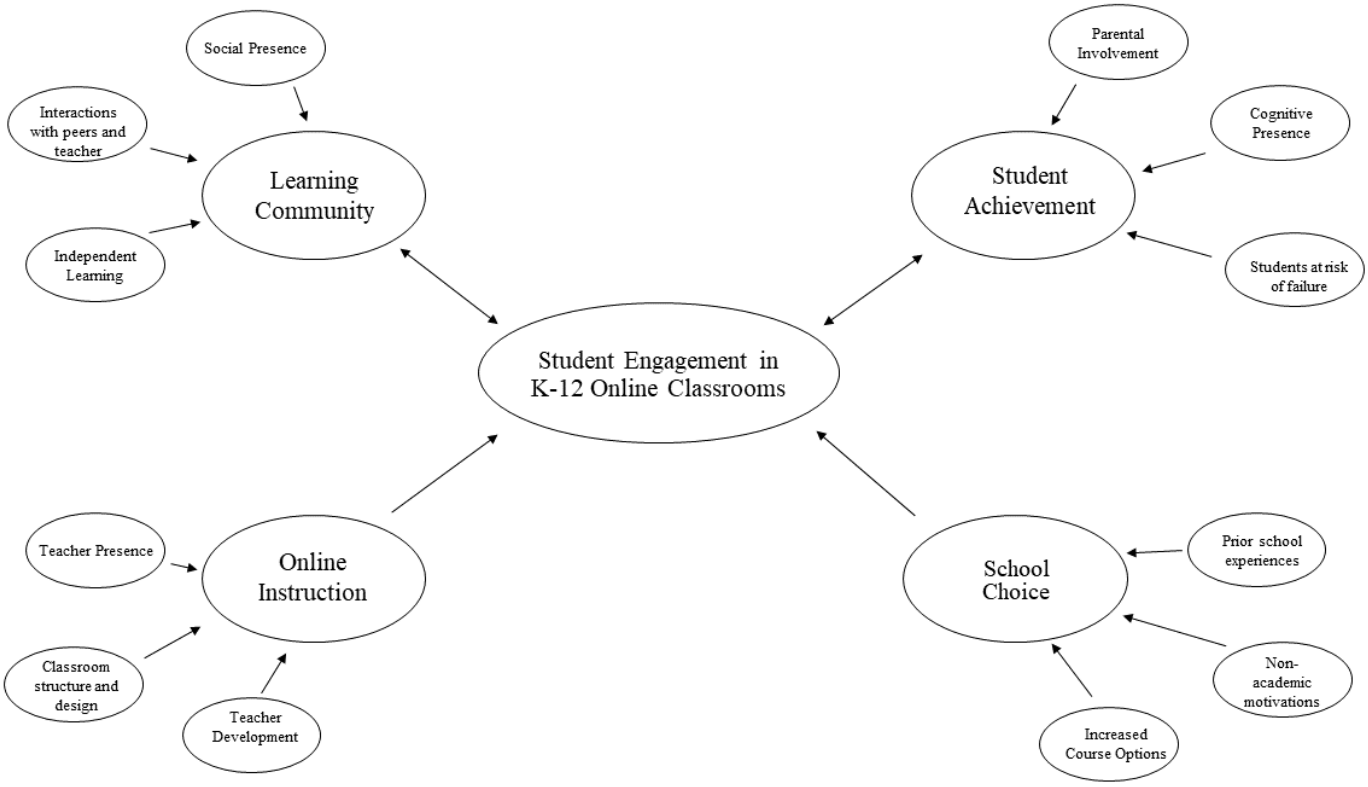

Figure 1.1. The conceptual framework of student engagement in K-12 online classrooms.

Theoretical Frameworks

Bronfenbrenner's Ecological Systems Theory

The primary theoretical framework for this investigation is Bronfenbrenner's (1994) ecological systems theory. This theory suggests that human development is a product of increasingly complex interactions between the individual and their environment (Bronfenbrenner, 1994). The ecological environment in which the target individual exists is considered a series of nested structures. The most internal level focuses on direct interactions with the individual, and the outer level advances to the evaluation of the larger cultural systems. There are five systems within this model, including the microsystem, mesosystem, exosystem,

macrosystem, and chronosystem. The next paragraph discusses the problem of low student engagement in online learning within all five systems.

The chronosystem evaluates individual and environmental changes that occur with the passage of time. This investigation includes the development of distance education to online elementary and secondary schools. The macrosystem describes larger social and cultural aspects that influence the individual student. This level of the system includes the reasons that families are selecting an online learning environment and the values and beliefs they hold about learning online. The exosystem provides insight into the indirect environments that do not immediately involve the student but have an impact on the student. This level of the system evaluates the role of the teacher primarily and their preparation for teaching online. The mesosystem makes connections across settings that involve the student. The notable underrepresentation of the mesosystem manifests primarily with the dual role of the parent, who also acts as the in-person learning coach or home support network for students. However, research revealed a paucity of research on the topic of parental involvement in online learning (Borup, Graham, & Davies, 2013b; Borup, West, Graham, & Davies, 2014; Hasler-Waters, Borup, & Menchaca, 2018), which suggests that part of the problem of student engagement may rest within the mesosystem. The microsystem typically depicts the interactions that occur within immediate physical proximity to the student, such as within a school or home setting. However, for online learning, the translation of this dynamic results in the learning interactions associated with schooling occurring within the physical home setting. Figure 1.2 outlines the alignment of the factors of the problem of low student engagement in an online learning environment within each ecological system.

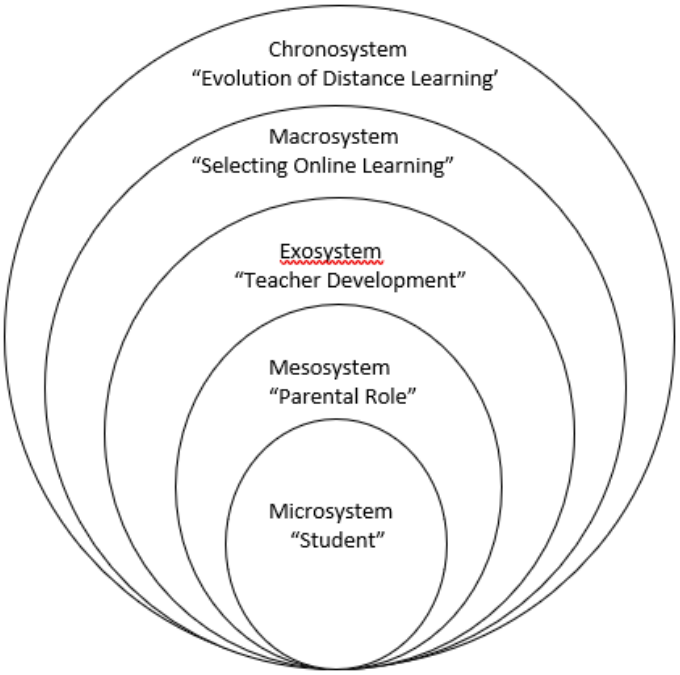

Figure 1.2. Bronfenbrenner's Ecological Systems model applied to the problem of student engagement in online learning (adapted with permission from "Nested or Networked? Future Directions for Ecological Systems Theory," by Neal & Neal, 2013, Social Development, 22, p. 725. Copyright 2013 by John Wiley & Sons).

The Community of Inquiry (CoI) Theoretical Framework

A second theoretical framework within the microsystem operationalizes the interactions of the individual student. The CoI framework, as mentioned previously, reflects the process of establishing a collaborative learning environment through the development of three forms of presence: cognitive, social, and teaching (Akyol & Garrison, 2008). The intersection of these domains supports the establishment of a community that can both build individual knowledge and fortifies the collective experience. The consideration of all three forms of presence is multi-dimensional in this conception of online learning. Cognitive presence is the extent to which the individual student can construct knowledge through a practical inquiry model that progresses from a triggering event through the mental resolution of that event (Garrison & Cleveland-Innes, 2005). Social presence defines the students' ability to communicate clearly, develop

relationships, and have a sense of belonging within a cohesive community (Akyol & Garrison, 2008; Tsai et al., 2008). Teaching presence reflects the course and instructional design and the application of the course to facilitate the social and cognitive presences (Akyol & Garrison, 2008). The intersection of these three forms of presence creates the educational experience, as outlined in Figure 1.3.

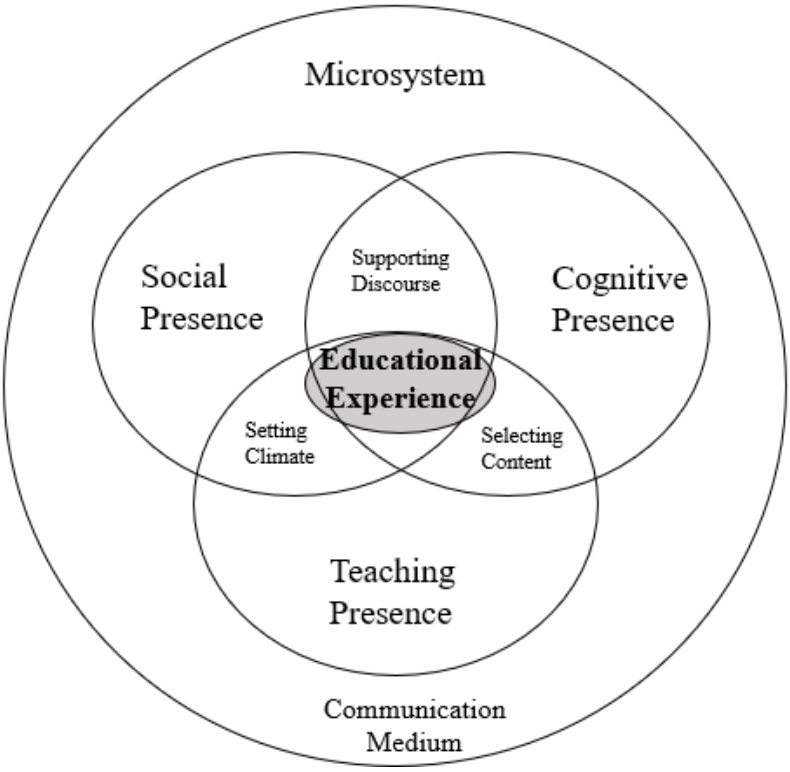

Figure 1.3. The Community of Inquiry Framework (CoI) model operationalized within the microsystem (adapted with permission from "Critical inquiry in a text-based environment: Computer conferencing in higher education," by Garrison, Anderson, & Archer, 2000, The Internet and Higher Education, 2(2-3), p.88. Copyright 2000 by Elsevier).

The Factors Informing Low Student Engagement in K-12 Online Learning

Applying Bronfenbrenner's (1994) ecological systems theory to the problem of practice provides greater understanding of the complex factors that contribute to the challenge of engaging students in elementary and secondary online classrooms. The next sections explore

factors relevant within each ecological system, beginning with the chronosystem and systematically progressing to the microsystem.

Establishing Best Practices in Online Learning: The Chronosystem

The field of distance learning has evolved, with the founding of the first cyber charter school occurring in 1994 (Waters et al., 2014). While inconsistent reporting across a variety of program structures makes it difficult to ascertain exact enrollment numbers, estimates in 2012 suggest nearly five percent of K-12 students are learning in online and blended courses within the United States (Watson et al., 2012). While more recent statistics on the number of students in K-12 online programs are elusive, there was a 16% increase in course enrollments in virtual schools between the 2010-2011 and the 2011-2012 school years, suggesting that the number of students in online schools is likely significantly higher at this point (Watson et al., 2012). Online learning exists in several forms that range from students taking a single online course while enrolled in a brick and mortar school, to a fully online learning experience in which students attend class virtually from their homes. In the 2015-2016 school year, 24 states offered state-run virtual schools (Evergreen Educational Group, 2017). There are also cyber charter schools, for-profit, and private online schools providing online learning options (Watson et al., 2012). Michigan was the first state to include a virtual learning course in their high school graduation requirements in 2006 (DiPietro et al., 2010), and as of 2017 five states include online learning as a requisite for high school graduation ("National Conference of State Legislatures," 2017).

The popularity of online learning continues to grow at an exponential rate, and an increase in research in the field is evident (Kennedy & Ferdig, 2018). However, there continues to be little research conducted to investigate and establish best practices in teaching in elementary and secondary online schools (DiPietro et al., 2010; Rice, 2006). Moreover, the

existing research parallels the best practice research in traditional learning environments and does not evaluate or investigate the unique aspects of learning online (DiPietro et al., 2010). The establishment of policy in online learning follows the pattern that the researchers in the field refer to as the cart before the horse effect, as best practices in online learning are not well understood by policymakers, who tend to apply policy from traditional brick and mortar school to online learning (Rice, 2006).

While there has not been significant research in establishing the best practices in online learning, there has been some effort to assess and determine the focus of the research in the field. In 2009, a study collected and analyzed group communications quantitatively to determine the priorities in the policy, practice, and research in K-12 distance education for five consecutive years (Rice, 2009). The study utilized the Delphi method, which requires anonymity, structured information flow, and controlled feedback to gather data from several sources. The Delphi method is useful when gathering information from a variety of stakeholders. This study identified potential participants through a search of websites related to state-level technology, universities, or sites associated with virtual schools and programs within the United States. This search resulted in 86 prospective participants who received an email invitation to participate. Of the 86 email invitations sent, 29 participants accepted, reflecting a 33.72% response rate, all of whom either engaged in distance learning, influenced policy decisions in the field, or were involved in research related to K-12 online learning. While this approach to finding participants was seemingly thorough, the prospective participant pool was dependent upon information that was available through Internet searches. This method for finding participants may have restricted the potential participants available, as material on the Internet is not always up to date or accurate. Moreover, given that the samples within each subgroup were small, the division of the

total sample into smaller sub-groupings may bring into question the validity and reliability of the results. The findings revealed that the highest priority across participant groups was the evaluation of course design and delivery, followed by best practices in distance education, and accountability measures comparable to brick and mortar schools. These results seem counterintuitive to accurately evaluate course design and delivery without first establishing the best practices in the field. Moreover, there appears to be little follow through on the established priorities as determined in this study.

Following the establishment of effective course design and delivery as a priority in the industry, additional research by DiPietro et al. (2010) recognized the intersection of pedagogy, content, and technology in successful online learning. The researchers focused on the instructional practices of 16 exemplar supplemental virtual school teachers. High school teachers were selected to participate based upon their performance evaluations, their level of activity within the virtual classroom, their communication skills, and their ability to support students in completing the class. The study involved conducting interviews with semi-structured questions focused on how their pedagogical practices related to their content teaching and technology integration. Analysis of the data occurred through four methods: coding, the constant comparative method, theoretical sampling, and data synthesis. The results revealed best practice in pedagogical strategies regarding online courses and instructional delivery of content, including content-based activities. Categorization of the pedagogical strategies resulted in sub-groupings of community, technology, student engagement, meaningful content, and supporting and assessing students. Further, online educators in this study recognized that establishing a presence within their virtual classrooms helped to maintain student engagement and motivated students to finish the class. The findings intended to inform the development of best practices in K-12 online

education. However, the seeming dearth of research and lack of implementation of existing research poses a challenge to the development of the industry. Choices in pedagogy, policy, and practice seem to occur without extensive foundational knowledge to inform the decisions. The lack of established and applied best practices in the industry further contributes to the problem of student engagement, which directly depends on the pedagogy, policy, and practice in place within an online learning environment.

Selecting Online Learning: The Macrosystem

The macrosystem level of this investigation focuses on the reasons that families choose to send their children to an online school and the extent to which they remain enrolled online. There are many reasons for families to choose online learning, including a broader course selection, to recover credit, to avoiding bullying, to eliminate commute, and to increase schedule flexibility to name a few (Beck, Maranto, & Shakeel, 2016; Ellis, 2008; Kennedy & Ferdig, 2018; Mann, Kotok, Frankenberg, Fuller, & Schafft, 2016). Online school selection is an important consideration when addressing the problem of low student engagement in online classrooms, as the motivation for selecting an alternative to the traditional local school can influence the students' willingness and ability to engage in the learning process. For example, negative educational experiences in other settings, such as being the victim of bullying or not receiving appropriate academic supports, may cause students to develop a negative relationship with learning. This negative relationship with learning could carry over into the online setting and make it more difficult for students to orient to and fully engage within the online classroom.

The reasons that families opt to send their children to online schools are varied and complex. The expected utility theory was the basis of the investigation by Rauh (2011), which posited that individuals make decisions about unknown variables based on their choice on a

comparison of the anticipated utility in combination with the probability of the outcome. The researcher evaluated the function served by online school options in comparison to brick and mortar schools. From 2007 through 2010, the researcher evaluated the performance of students enrolled in South Carolina Virtual Charter School (SCVCS), which serves two percent of the state student population, on their state-required high school graduation assessment. This test assesses English/language arts and mathematics content areas. This school was selected for the context of this research because the state tends to have a socioeconomic divide and, as a state, demonstrates lower educational outcomes (National Education Association, 2010). SCVCS is state-funded and consequently required to meet state standards. The demographics of the students at SCVCS suggest that enrolled students tend to be from higher socioeconomic backgrounds, with 51% of students transferring into the program from home school or private schools.

Using an expected utility theory framework, the researcher used the state averages as the baseline measurement to investigate the utility of online charter schools as compared to traditional brick and mortar schools (Rauh, 2011). Doing so revealed that students from schools with higher poverty levels have the most to gain from selecting an online charter school. The measure of poverty for this study was the School Poverty Index, as this reflects students eligible for the free or reduced lunch program or Medicaid. However, the researcher determined that the greatest percentage of students who were enrolling had the least to gain academically, thereby suggesting that the motivation for families selecting online charter schools were other than academic. One of the limitations of this study was that achievement was measured exclusively by standardized test scores required for graduation, and no information was available on elementary or younger secondary students. Non-academic factors motivate the selection of

online learning, and for students from high poverty areas, this could include access to technology that they might not have otherwise. This finding aligns with other research that suggest online cyber charter students made smaller gains with overall lower levels of achievement in reading and mathematics when compared to traditional brick and mortar schools (Ahn & McEachin, 2017; Carnahan & Fulton, 2013; CREDO, 2015; Gill et al., 2015; National Alliance for Public Charter Schools, 2016).

The measurement of achievement for mathematics and reading used is an important consideration in assessing the quality of education available in online classrooms. Hung, Hsu, and Rice (2012) collected data from 7,539 students enrolled in a K-12 state-wide virtual school during the 2009-2010 academic year. Researchers triangulated data from the learning management system, student demographics, course evaluations, and the level of engagement as determined by the frequency of specific types of interactions. In this study, the researchers found that in larger cities, younger students outperformed older students. The researchers posited that younger students might have had higher motivation levels than their older peers as they tended to select courses not offered in their traditional school. Older students, in contrast, tended to enroll in online coursework to recover credit for a failed class. While this large study utilized data mining techniques to gather information, there was little information reported on the course evaluation data used for triangulation. Further, the reliability of course evaluations completed by younger students could be questionable as they have a limited basis for comparison. The economic model of school choice in education allows for a great range of possible reasons for selecting an online school, and these reasons are important to consider when evaluating the level of engagement of students within an online classroom.

Geographic considerations. With many online schools operating at a state-wide level, online schools and cyber charter schools specifically tend to attract students from a wide geographic locale (Mann et al., 2016). Rural students, who may live far from their assigned brick and mortar schools and have the fewest alternative options to their traditional school districts, are consequently more likely to enroll in an online charter school (Gill et al., 2015; Mann et al., 2016). Beck, Maranto, and Shakeel (2016) researched a secondary level cyber charter school with approximately 700 urban and rural students to compare the parent and student reasons for choosing online learning. Using a social theory and extensibility framework, the researcher evaluated the reasons that 269 students and 232 parents reported selecting online learning, their level of involvement, and satisfaction. Completion of initial factor analysis, followed by an Ordinary Least Squares regression test, determined the extent to which geographic locale influenced the decision to select online learning. Parents and students shared three common reasons for selecting an online learning environment: curricula, which included teachers and their ability to personalize content; behaviors, including avoiding bullying and students' needs not being met in their previous school; and structural concerns including a wider range of classes offered, a flexible schedule, and no commute. While this investigation clearly outlines some of the parent and student motivations for selecting online learning, the analysis revealed that there was no significant difference in the reasons families select online learning according to geographic locale. While the survey administration and analysis seems comprehensive, the study references extensive time spent visiting and observing the school, yet there was no reporting of the analysis of any qualitative data collected. Moreover, this study involved a single school, and consequently, which limits the generalizabilty of the results.

A previous evaluation of distance learning that surveyed virtual high school and community college students contrasted with the findings above. The students in both the high school and community college were taking Internet-based classes in this study, with high school students having an unlimited amount of time to finish their coursework (Roblyer, 1999). While this investigation did not include parents and focused on the students, the results revealed the identification of four factors that contributed to the process of selecting an online education: logistics, control, personal interactions, and technology (Roblyer, 1999). Unfortunately, throughout this study, there was a high rate of students who dropped out of their courses, and thus data were not able to be collected from them. The high drop out rate suggests that the data collected were from students who were actively engaged in the course and that gaining additional information from those who were less engaged might be useful. While both studies revealed logistics, such as a flexible schedule and no commute, motivated students to select online learning, those from more rural areas focused on the content of available courses as they could not access this content in their traditional rural schools (Beck et al., 2016; Roblyer, 1999). Further research would help to elucidate the distinction in priorities according to elementary, secondary, and higher educational opportunities. While there are clear trends in the factors considered for initial enrollment into an online learning environment, student retention is a subsequent challenge (Mann et al., 2016). This next section further elaborates on student mobility within online school settings.

Student mobility. The National Alliance for Public Charter Schools (2016) reported that the mobility rate for students before enrolling in a virtual charter school is approximately the same as it is for traditional public school students, which is around eight to nine percent a year. However, the average length of enrollment in an online charter school is approximately two

years (Gill et al., 2015), with a 36% mobility rate for full-time virtual charter school students (National Alliance for Public Charter Schools, 2016). The high mobility rate and the short length of enrollment indicate that students have a more disruptive school experience after transferring out of a virtual charter school than they did before enrolling in a virtual charter school (National Alliance for Public Charter Schools, 2016). Once students decide to leave their local brick and mortar school and enroll in an online school, students more readily jump from one online school to the next. This high rate of mobility and the resultant educational disruption could directly impact a student's ability to engage in the learning process.

In the United States, three states, including Pennsylvania, Ohio, and California, comprise nearly half of the student enrollment in online charter schools for the country (Gill et al., 2015). Research conducted in the state of Pennsylvania assessed the enrollment patterns across different geographic locales, reviewing nearly 1.5 million student records from the state Department of Education during a four-year study (Mann et al., 2016). This study employed descriptive and inferential statistics in the quantitative evaluation, and logistic regression analysis to estimate the probability ratio of enrollment in brick and mortar schools and online schools. The findings revealed that only 55% of students remained in the cyber school for the duration of the study, supporting the findings that there is a high rate of inter-school mobility of students enrolled in online schools.

Research further suggests that the overall level of achievement in both reading and mathematics of students in online learning environments is lower than that of their traditional brick and mortar counterparts (Ahn & McEachin, 2017; Carnahan & Fulton, 2013; CREDO, 2015; Gill et al., 2015; National Alliance for Public Charter Schools, 2016). Moreover, there is likely a sub-population of students who enroll in online learning environments because they were

disengaged in their traditional brick and mortar schools and are attempting online learning as an alternative option (Gill et al., 2015). There is a broad range of possible reasons for families to choose to send their child to an online school, including some students who take courses online for credit recovery after the failure of a previous class. While these students may benefit from the individual nature of online learning, they often struggle to manage their time and remain motivated (Lowes & Lin, 2018). In one study, at-risk students in online credit recovery courses demonstrated a lower rate of completion that those students in the greater population (Borup, 2018). Student mobility, in combination with previous low academic achievement, poses significant challenges to the problem of low student engagement in K-12 online learning.

Teacher Development: The Exosystem

Before exploring teacher preparation to teach online, it is important to identify the teachers who are in online classrooms. A national study focused on the profile of teachers in online schools used a mixed methods approach to gather information from teachers across the country. Archambault and Crippen (2016) used a non-random purposeful sample of 482 online teachers from state sanctioned schools across 25 states. They determined that most online educators initially taught in a traditional face-to-face environment. The results revealed that online educators had an average of 14 years of teaching experience with an average of four years' experience teaching online. Further, online teachers were typically female (77%), White/ Caucasian (91%), and well educated, with 62% holding Master's degrees.

This study additionally reported that the online teachers who responded teach an average of 97 students, with one teacher reporting oversight of approximately 2,000 students (Archambault & Crippen, 2016). Likewise, Hawkins et al., (2011) reported an average student-to-teacher ratio of 233:1, ranging up to almost 2,000 students per teacher. While these reports do

not specify as to whether this student to teacher ratio is per live class session, over a semester or throughout a school year, the upper range of this ratio is significantly higher than in a traditional school. While many online educators have previous experience teaching in brick and mortar schools, the demands of teaching in an online environment where teachers may be responsible for hundreds and even thousands of students at a time requires a different skill set. Moreover, as teachers are unable to read non-verbal communications, such as facial expressions and body language, engaging students in an online setting is further challenged (Hawkins et al., 2012; Liu, Black, Algina, Cavanaugh, & Dawson, 2010). Addressing and adequately preparing for the unique challenge of learning online supports teachers' ability to engage students in online classrooms.

Preparing Teachers. As the field of online education has grown, only eight states (Georgia, Idaho, Louisiana, Michigan, South Carolina, South Dakota, Utah, and Vermont) have established online teaching standards and incorporated state-level online teaching licensure guidelines (Archambault, DeBruler, & Freidhoff, 2014). There is an evident need for more robust preparation for online teachers at every step in the process, which includes preservice education, the onboarding process when teachers begin to teach in an online school, ongoing professional development for in-service teachers, and advanced credentialing opportunities specifically focused on online teaching. A search including the key words such as *onboarding, orientation, new teacher induction, first year teacher, teacher intern/ internship, education, school, teacher, online, virtual, cyber, and internet* did not reveal information about what is included in the onboarding process for new teachers in online schools. While this onboarding process at times may be the only preparation for teachers before they assume their role in an online classroom, the literature does not outline this process as distinct from professional development.

Professional development can occur through more formal, structured opportunities, such as workshops or coursework, or through informal, unstructured opportunities such as peer mentoring or coaching. Many new online teachers are experienced educators, and therefore, peer mentoring and coaching can be important in developing the new skill set required for teaching online. There are several formats to a peer mentoring relationship, including task-based, experience-based, just-in-time, one-to-one, team, and formal mentoring (Wortmann et al., 2008). Task-based mentoring addresses a short-term need to develop a specific skill; experience-based mentoring allows a novice to learn from a mentor with experience; just-in-time mentoring supports individuals who unexpectedly need help; one-to-one mentoring fosters individual relationships between mentor and mentee; team mentoring connects groups of mentors and mentees; and formal mentoring clearly outlines expectations or outcomes that serve as the focus of the mentoring relationship. Additionally, credentialing for online teachers is not uniform throughout the country, with only a handful of preservice programs presenting certification in online teaching or national programs offering advanced credentialing to online teachers. The following sections outline three of the four phases of teacher professional growth, beginning with preservice education, progressing through in-service professional development, and finishing with advanced credentialing.

Pre-service education. While there are many similarities in the requisite teaching skills across environments, including content specific knowledge, teaching online is inherently different from teaching in a traditional face-to-face environment. The roles, responsibilities, and instructional strategies employed by online teachers are unique to their online setting (Hawkins et al., 2012). While to date, most educators have started their teaching careers in a traditional brick and mortar setting, as the field of online teaching grows, teachers may accept their first

teaching position as online educators. Accordingly, a few teacher preparation programs have begun to offer preservice teachers the opportunity to select online field placement opportunities, such as at the University of Central Florida and the University of Florida who have partnered with Florida Virtual School to provide student teaching experiences (Kennedy & Archambault, 2012). However, field placements for new teachers in online settings are not yet commonplace in teacher preparation programs (Archambault et al., 2016; Kennedy & Archambault, 2012; Kennedy, Cavanaugh, & Dawson, 2013).

A study of the field experiences offered to preservice teachers to help them prepare to teach in K-12 online schools established the authentic setting of teaching online as an important consideration for teachers to learn to interact with their environment (Kennedy & Archambault, 2012). This study identified potential participants through a search of teacher education programs listed on teacher education accreditation websites. The final sample reflected a total of 363 different institutions. Identification of individuals who could answer relevant questions, such as field experience personnel and administrators of teacher education programs, occurred. These 1,525 potential respondents received the survey link (Kennedy & Archambault, 2012). Implementation of Dillman's Tailored Method Design for mail and internet surveys (Dillman, Smyth, & Christian, 2014) increased the survey response rate, with pre-administration and follow up communications sent. A total of 522 responses were collected, reflecting a 34% response rate. The results revealed that 79% of the higher education programs surveyed offer no online field experiences in K-12 online programs. Furthermore, only 1.3% of higher education programs surveyed reported partnering with K-12 online schools to offer online field experiences to preservice teachers. Qualitative survey responses indicated the belief that offering online field

experiences to preservice teachers was unnecessary because no legal requirement existed and faculty did not believe there was a need for preparation in the field of online teaching.

In a follow up study in 2016, the administration of the same survey occurred again (Archambault et al., 2016). In this replicated study, there were 2,271 potential respondents identified, resulting in 427 usable responses reflecting a 37% response rate. There were slight gains recognized in the number of higher education programs offering field experiences to preservice teachers, including 15 programs reflecting 4.1% of responding programs. Further, a case study of three graduate level students in a preservice online teaching experience occurred as well (Kennedy et al., 2013). These preservice teachers confirmed the need for preservice online placements as they underscored the importance of the practical application of theories and concepts learned in the university to an environment similar to future workplaces (Kennedy et al., 2013). Participants reported that the opportunity provided exposure to new technologies and teaching strategies and proved a valuable learning endeavor (Kennedy et al., 2013). Unfortunately, the small size of this case study investigation limits the transferability. Garnering additional information on the benefits of offering teachers the chance to participate in pre-service online educational opportunities would be beneficial to further the research in this field.

Professional development. Given that many online teachers have limited experiences with teaching online prior to assuming their role as an online teacher, the professional development opportunities offered to them are essential to their growth as online educators. There is no research regarding the onboarding process for new online teachers, and in a report from 2010, which surveyed 732 K-12 online teachers across the United States, 25% of them reported no training (Dawley, Rice, & Hinck, 2010). However, this same investigation revealed that 87% of online teachers received professional development in online teaching, with 74% of

teachers reporting that their school required professional development. In this research, participants were able to select multiple options for the delivery of the professional development received. The methods most commonly utilized represented 53% equally for fully online (facilitated) and blended (face to face and online) opportunities, with fewer occasions for fully face to face (29%) and fully online (non-facilitated) (19%) learning. Further, 94% of respondents indicated that they received their professional development from their school. This investigation included both formal and informal professional development opportunities, with results indicating that the most common forms of professional development include ongoing training sessions (81%), workshops (77%), professional learning communities (66%), and peer coaching/mentoring (62%).

Additional investigation of the extent of online teacher preparation occurred by Zweig and Stafford (2016). This study involved teachers from three online schools and one consortium that provided supplemental online courses to augment face-to-face learning. While the schools included in this survey are not the same as a fully online learning environment, they serve as a good proxy for teachers in a fully online learning environment. While this investigation confirmed the previously mentioned research, which established no preparation in preservice education, online educators tended to receive professional development after accepting their online teaching position (Zweig & Stafford, 2016). There was significant variation in the topics available to teachers for professional development, with instruction in technology usage available to nearly all online teachers (the minimum reported was 87% ranging to a maximum of 100%) with fewer opportunities for support in classroom management and leadership (the minimum reported was 46% ranging to a maximum of 51%) and even fewer occasions for

preparation in how to support students with special needs (the minimum reported was 25% ranging to a maximum of 34%).

A majority of teachers (75-100% in each school included in this study) indicated that more professional development would be beneficial. Consequently, an investigation of teachers' potential challenges related to online instruction revealed the most commonly reported difficulties pertained to student engagement. Specifically, teachers struggled with supporting students to complete courses and assignments, increasing the interactions among peers, and maintaining engagement throughout the course. The teacher responses in this study directly connect to the need for more education and coaching in online instruction to support teachers in being better able to engage students in online education.

Advanced credentialing. Earning advanced credentialing in online teaching can occur before or after beginning to teach online. In the previously mentioned survey of 732 K-12 online teachers, 12% reported pre-service education in online learning, while 43% of teachers with 6-10 years of experience reported college or university training (Dawley et al., 2010). This likely indicates that more experienced online teachers are seeking additional higher education offerings focused on online teaching. While there are more opportunities for advanced credentialing through higher education than through independent credentialing programs, focusing on state-approved K-12 online endorsements serves as a reflection for the evolution of the standards in the industry. A nation-wide investigation revealed that only nine states offer K-12 online teaching endorsements: Georgia, Hawaii, Idaho, Louisiana, Michigan, Pennsylvania, South Carolina, South Dakota, and Vermont (McAllister & Graham, 2016). The majority of these state endorsements require a level of online field experience, although frequently, there is no clear outline of the minimum number of hours required. Additionally, all of these states except South

Dakota offers the online state endorsements only to teachers who already hold a teaching license, making this advanced credentialing exclusively available to experienced teachers who have completed their pre-service education and certification eligibility. The number of hours required for the endorsement varies by the nine states and ranges between 9-20 credit hours. Finally, six of the nine states offering endorsements require experience with online learning as either a teacher or a student or both. Online teaching endorsement requirements by state are outlined below in Table 1.1.

Table 1.1 K-12 Online Teaching Endorsements by State (McAllister & Graham, 2016)

State	Required Online Field Experience	Required Credit Hours	Require Teaching License	Require Experience as Online Teacher or Student
Georgia	Yes	Unspecified	Yes	Student
Hawaii	Yes	9/ Unspecified**	Yes	Teacher
Idaho	Yes	20	Yes	Teacher & Student
Louisiana	Yes*	Unspecified	Yes	Unspecified
Michigan	Yes	20	Yes	Teacher
Pennsylvania	Yes	12	Yes	Teacher
South Carolina	Unspecified	12	Yes	Unspecified
South Dakota	Unspecified	18	No	Student (3 hr. online class)
Vermont	Yes	6-15*	Yes	Unspecified

* Options based on previous online teaching experience
** Options require completion of an online teaching program but do not specify credit hours

The Parental Role: The Mesosystem

The mesosystem evaluates the interactions between various microsystems involving the student (Bronfenbrenner, 1994). However, in an online learning environment, the distinction between various settings becomes blurry as K-12 students learn from their living rooms. The primary manifestation of a mesosystem within online learning environments occurs through the multiple roles of the parent. Typically, parents exist within the microsystem of the student's family primarily, interacting with the school as needed. However, in an online learning

environment, parents often serve in the role of learning coach or supporter, providing the student with the structure and encouragement needed to succeed (Borup, West, et al., 2014; Curtis & Werth, 2015). Specifically, the responsibilities of the organizer, instructor, motivator, and manager have been identified as part of the parental role when students are learning online (Hasler-Waters et al., 2018).

In traditional brick and mortar schools, parental involvement supports student success (Lareau, 2011). To establish and provide a valid and reliable instrument for measuring parental involvement in online schools, modification of an instrument used in traditional brick and mortar schools on parental involvement supported the creation of an instrument appropriate for online learning. In his doctoral research, Black (2009) revised an instrument based on a model of parent involvement that included four distinct mechanisms: parental encouragement, parental modeling, parental reinforcement, and parental instruction (Hoover-Dempsey et al., 2005; Liu et al., 2010). The online validation of this instrument kept these four criteria and included 51 Likert-style response questions measuring the four variables (Liu et al., 2010). The survey was then administered to 938 parents of students in virtual schools and analyzed using Confirmatory Factor Analysis. The chi-square assessing goodness to fit was significant, indicating that the variables measured were appropriate considerations. Cronbach's alpha assessed the reliability of the four scales reflecting the four variables ranged between 0.88 and 0.93, suggesting high reliability of the scales comprising the instrument. Given the transactional distance inherent in learning online (Moore, 1993), establishing a valid and reliable instrument to assess parental involvement could be important in ensuring student success in the online environment. However, to date, there has not been significant research regarding parental involvement in online learning environments (Borup, et al., 2013b; Borup, West, et al., 2014; Hasler-Waters et al., 2018).

There is significant variation in the amount of parental involvement that occurs in online learning (Borup, Stevens, & Waters, 2015; Borup, West, et al., 2014; Hasler-Waters et al., 2018). These four factors influence the extent to which parents are involved: school policies, parent demographics, student perceptions, and student needs (Hasler-Waters et al., 2018). Different schools have different policies and expectations for parental involvement, making it difficult for parents to understand their role at times (Borup, 2016b; Hasler-Waters et al., 2018). Additionally, parental involvement tends to respond to the level of student need, with both student and parent reporting increased levels of learner-parent interactions having a negative correlation with course outcomes (Borup et al., 2013b). While the negative correlation between learner-parent interactions and course outcomes may seem contradictory, the researchers speculate that increased parental interactions occur when there is a decrease in academic performance. However, overall, students in this study tend to find parental involvement supportive and motivational (Borup et al., 2013b), with an evaluation of the parental role in student success and achievement in online learning revealing the parental role as one of "monitor, mentor, and motivator" (Curtis & Werth, 2015, p. 179).

The Student: The Microsystem

The student experience in online learning is operationalized by the levels of cognitive, social, and teacher presence as described in the Community of Inquiry (CoI) framework (Akyol & Garrison, 2008; Cleveland-Innes & Garrison, 2010). In a higher education environment, and likely in elementary and secondary education as well, the relationship between the three forms of CoI presence has a greater impact for fully online students than for students who have the opportunity for face-to-face interactions (Shea & Bidjerano, 2009). The intersection of social and cognitive presence establishes discourse within the classroom; the intersection of social and

teacher presence determines the climate; and the intersection of teacher presence and cognitive presence reveals the selection of course content (Garrison, Anderson, & Archer, 2000).

Social presence. Social presence is considered necessary in establishing a sense of community in online learning, which supports active participation and academic success (Akyol & Garrison, 2008; Curtis & Werth, 2015). Moreover, for adult learners in higher education, having a sense of community is directly related to satisfaction with online learning (Tsai et al., 2008). Reasonable logic would suggest that the comfort that results from having a sense of community within online courses would support the learning process for younger students as well, and as such this research can serve as a proxy for elementary and secondary students. According to Moore (1989) and Moore and Kearsley (2012), there are three types of interactions in distance learning: learner-learner, learner-content, and learner-teacher. Typically, increasing social presence relates to increased opportunities for interaction among students and between students and their teacher. These social interactions foster an environment of collaborative learning, and without these valuable interactions, students become more autonomous in their learning process (Moore, 1993). Social presence interacts with cognitive presence by providing the opportunity for meaningful discourse. Further, social presence is a prerequisite for students to be able to construct knowledge together, as students need to feel comfortable with each other to optimize opportunities for collaboration (Borup, 2016a; Garrison et al., 2000).

Further evaluation of the interactions that occur online revealed that the frequency of interactions increased with the inability to read facial expressions and perceive emotional expressions (Han & Johnson, 2012). Moreover, a study of adolescent interactions in a virtual high school revealed that students believed that nearly half (45.3%) of interactions were social, with increased peer interactions correlating with both higher levels of student satisfaction and

increased final course grades (Borup et al., 2013a). Students in this study suggested that peer interactions helped to motivate them, but they did not perceive interactions as having a direct impact on their understanding of course content. These results aligned directly with the research of Garrison and Cleveland-Innes (2005), who suggested that increasing interactions in online learning supports the engagement of learners, however, high levels of interactions alone do not ensure cognitive presence.

Cognitive presence. According to the CoI framework, cognitive presence has four stages: the event, exploration, integration, and resolution (Akyol & Garrison, 2008; Shea & Bidjerano, 2009). Moreover, lower levels of participation with social and teacher presence indicate a lower level of cognitive presence, with teaching presence serving as a moderating factor of meaningful understanding of content and cognitive presence (Garrison & Cleveland-Innes, 2005; Shea & Bidjerano, 2009). Cognitive presence is important for the acquisition of new skills and knowledge and connects directly with measures of achievement and success.

In contrast to previous research that indicates that student achievement is lower in online settings (Ahn & McEachin, 2017; Carnahan & Fulton, 2013; CREDO, 2015; Gill et al., 2015; National Alliance for Public Charter Schools, 2016), Barbour and Mulcahy (2008) indicate that students who learn online perform as well, if not better than, their brick and mortar counterparts. In their study, Barbour and Mulcahy (2008) collected both standardized public test scores and final course evaluation scores from the Department of Education in Canada for every student in the Province of Newfoundland and Labrador for the school years 2001-02 to 2004-05. However, the study excluded students who withdrew from courses because they were not doing well, thereby providing an assessment of students who were exclusively performing well. Likewise, researchers found that past success, as reported by students' grade point averages, was the

greatest predictor of future academic success (Roblyer et al., 2008). This same study further noted that active involvement early in a course was a strong predictor of success in the class (Roblyer et al., 2008). The next section further explores school attendance within online classrooms, as being available for learning is a prerequisite for the demonstration of cognitive presence.

School attendance. Active involvement in online learning looks different from that in traditional brick and mortar schools. A study focused on supporting students to become successful online learners posits that an internal locus of control would lead to higher final grades (Lowes & Lin, 2015). The definition of locus of control pertains to the individual's perception regarding their ability to control their environment as opposed to feeling that outside forces control situations. Those who have an internal locus of control, or believe that they can control their environment, may be more capable of adjusting to new situations (Lowes & Lin, 2015). In this study, the researchers delivered Rotter's locus of control instrument electronically to all 798 students enrolled in Pamoja Education, a school offering online, blended, and face-to-face learning focused on optimizing technological opportunities, during the second week of the 2013-2014 school year. At the end of the school year, the researchers collected final grades and had a total of 499 students from whom they had both survey results and final grades (Lowes & Lin, 2015). Nuanced results revealed that participants with an external locus of control for school-related achievement and an internal locus of control for fate/chance, were at risk of not performing as well in an online course. Logic would suggest that an internal locus of control for school-related achievement would require regular attendance and cognitive presence in school. However, in an online learning environment, issues of truancy need redefinition.

In a traditional face-to-face environment, measuring attendance and truancy typically reflect seat time (Archambault et al., 2013). However, in a case-study analysis within the Minnesota Virtual High School, the definition of truancy shifted to the evaluation of progress through online coursework as opposed to time spent in class (Archambault et al., 2013). Shifting the definition of truancy requires changing the evaluation of attendance measures from daily to weekly. With this definition of attendance and truancy that is specifically applicable to a K-12 online setting, preventative actions can more readily occur to maintain a student's cognitive presence within the microsystem of the classroom. The measure of attendance is an important consideration when assessing and evaluating the level of engagement demonstrated by students.

Students at-risk of failing. Cultivating student engagement in online learning can both depend upon the level of prior achievement the student has experienced and influence the level of performance of which they may be capable in the future. Further, factors that place students at risk of failure can threaten student potential. Student characteristics can directly impact their ability to successfully progress through the four stages of cognitive presence to engage in the learning process. Students who are in danger of having educational difficulties that may result in failure are considered at-risk (Finn, 1993). There are both status and behavioral risk factors to consider, including socioeconomic status and attending to the requirements of school (Finn, 1993). While at-risk students can be of any age, as they become older, the possibility of their not graduating from high school increases. According to the National Dropout Prevention Center (2018), there are four categories of reasons that students may not complete their high school education: school related, student related, community related, and family related. There are a variety of reasons in each category, including a poor school attitude, retention/suspensions, disregard for student learning styles, and illness or disability (National Dropout Prevention

Center, 2018). As previously suggested, students may enroll in online learning because their needs were not being met in a traditional school environment (Gill et al., 2015), and many online schools serve a high number of at-risk students (Watson et al., 2012).

Several factors increase the likelihood that students at-risk of failing will be able to complete high school. According to Repetto (2018), the five primary considerations for online students at-risk of failing include: their ability to connect what they are learning to their life after school; a "safe and supportive climate for learning"(p. 167); the ability to actualize their control over their learning process and behaviors; an evidence-based curriculum that uses effective strategies to engage and support learning; and participating in a caring community. Attending to these five factors is particularly relevant for students at-risk of failing and special education populations who may have more needs and require more learning supports, and for whom online learning environments may offer an ideal alternative for earning their diploma (Repetto, 2018). In a study by Lewis, Whiteside, and Garrett Dikkers (2014), students at-risk of failing revealed that one of the benefits from learning online includes the opportunity to individualize pacing, with the ability to work ahead. Further, the autonomy and responsibility of learning online require students to manage their time well. Supporting students in becoming familiar with how to learn online and providing appropriate supports are essential for ensuring success.

The categorization of students at-risk of failing includes those who receive special education services (Repetto, 2018). The Individuals with Disabilities in Education Act (2004) supports the identification of students with disabilities and ensures their access to free appropriate public education. Determining eligibility depends on the individual students' performance, which may be different in an online learning environment from a traditional public school (Rice & Dykman, 2018). Furthermore, there are no federal laws in place that specifically

address special education in online learning environments (Rice & Dykman, 2018). The presumption is that the regulations that exist for traditional brick and mortar schools extend to online schools as well. However, the lack of federal policy in this area makes it challenging to ensure adequately meeting the needs of students in special education in online learning environments.

A study of special education services in online learning evaluated Special Education Data from the Pennsylvania State Department of Education between 2005-2009. The results reported the growth rate of students in special education in online programs as higher (114%) than the growth rate of general education students (83%) in online programs over the four years (Carnahan & Fulton, 2013). However, the extent to which these students are being supported appropriately within their online classes is undetermined, with a reported 98% of students in special education placed in general education classrooms in six of the schools from which data collection occurred. The majority of online students in special education in this study fell into the primary category of having a learning disability, with achievement on state assessments comparable to other online students in that they are behind in mathematics and reading. Additional information would be beneficial to determine if the special education population is more considerably behind in reading and mathematics as compared to their general education online peers. Regardless of their pre-existing academic needs, teachers need to provide each student with the supports and structure required to engage in optimizing the student experience in learning online.

Teaching presence. Teaching presence is often a mitigating factor in establishing a classroom structure and environment that facilitates student involvement within the online classroom. In a study aimed at providing students with a voice in determining what was

important from online teachers, students reported that there were three primary aspects of teacher engagement that were most significant: the design and organization of the class, the instruction, and the facilitation (Borup & Stevens, 2017). Similarly, the CoI framework outlines that the domains of design and organization, facilitation of discussions, and direct instruction are manifestations of teaching presence (Akyol & Garrison, 2008). In online learning, the teacher has a responsibility to structure the learning environment in a manner that optimizes success for the student (Roblyer et al., 2008), and the more logical and systematic the organization and design are, the easier it is for students to follow course content (Borup & Stevens, 2017). However, as is the case in brick and mortar schools, online programs vary in the extent to which online teachers can modify classroom structure and daily lessons. Some programs are utilizing a specific curriculum, leaving the teachers with little control over the design and content of their classes. Adolescent students in Borup and Stevens' (2017) study further outlined classroom facilitation into three key elements: nurturing relationships, monitoring engagement, and motivating students. Moreover, while there was a small sample size, students reported that having a constructive relationship with their teachers positively affected their ability to succeed in class.

Unfortunately, this student perspective contrasts with the teachers' perceptions of online learning in that teachers report limited social and supportive teacher-student interactions (Hawkins et al., 2011, 2012). One study on teacher interactions speculates that the apparent lack of social and supportive teacher-student interactions may result, in part, from teachers not valuing this type of interaction (Hawkins et al., 2011). Furthermore, teachers reported feeling disconnected in several ways: from students, from their concept of what it means to be a teacher, and from their teaching peers (Hawkins et al., 2012). In this study of teacher's perceptions of

teaching online, there was a sense that virtual schools lacked a sense of community, and teachers felt, "pretty much everybody is their own island" (Hawkins et al., 2012, p. 137). Teachers sense of disconnect and perceived lack of community poses a threat to their ability to create an environment that facilitates interaction and fosters meaningful learning for their students.

Conclusion

Numerous factors contribute to the problem of low student engagement in K-12 online learning. Bronfenbrenner's Ecological Systems Theory appropriately situates the problem through a nested model that supports viewing the problem from multiple perspectives. The chronosystem level problem of a lack of established best practices in the field infiltrates all other levels of the ecological system (DiPietro et al., 2010; Rice, 2006). Within the macrosystem, the beliefs about learning online impact school choice options. The reasons that students select online learning are unclear, with their decisions impacted by non-academic reasons (Rauh, 2011). Moreover, within the exosystem, teachers are not prepared for the unique responsibilities aligned with teaching within an online context in advance of assuming their roles as online educators (Archambault et al., 2016; Kennedy & Archambault, 2012; Kennedy et al., 2013). While teachers recognize that instruction and support is available, the focus for professional development tends to be on technology (Zweig & Stafford, 2016), as opposed to facilitating classroom organization and structures to increase interaction and engagement (Akyol & Garrison, 2008; Shea & Bidjerano, 2009; Zweig & Stafford, 2016). Additionally, the role of the parent is unique when students are learning online, as parents frequently step into a supportive role for students (Borup et al., 2013b; Curtis & Werth, 2015; Hasler-Waters et al., 2018).

Within the microsystem, student interactions are evaluated according to the social, cognitive, and teacher presence as outlined in the Community of Inquiry framework (Akyol &

Garrison, 2008; Cleveland-Innes & Garrison, 2010; Shea & Bidjerano, 2009). While ideally, the intersection of the three forms of presence creates the optimal student experience, the current practice in online learning suggests that the role of the teacher may be ill-defined. Consequently, teachers are not consistently able to create the classroom structures that facilitate engaging students in learning online, as teachers themselves do not feel a sense of community (Hawkins et al., 2012). Clearly defining the teacher role and preparing teachers to engage students in K-12 online learning accordingly is an area that requires further investigation. Part of preparing teachers for their responsibilities as an online educator includes evaluation of the structure of the online learning environment. The level of facilitation of interactions that occurs within the online classroom needs further investigation as well, and the course structure and design impact the interactions between teachers and their students. Specifically, evaluation of teacher professional development opportunities that support teachers in structuring and facilitating active engagement within their classrooms were important in effectively addressing how to engage students in K-12 online learning environments.

Chapter 2: An Empirical Examination of the Underlying Factors

Historically investigated in brick and mortar schools, student engagement is multi-faceted. Behavioral, emotional, and cognitive forms of engagement contribute to overall engagement (Fredricks et al., 2004) with active and passive levels contributing to the extent students are participating and acquiring new information during individual and collaborative activities (Milligan et al., 2013; Smith & Smith, 2014). In online learning environments, the level of achievement in both reading and mathematics is lower than that of their traditional brick and mortar counterparts (Ahn & McEachin, 2017; Carnahan & Fulton, 2013; CREDO, 2015; Gill et al., 2015). Moreover, low student engagement levels correlate with remediating low levels of achievement (Fredricks et al., 2004; Henrie et al., 2015). This empirical assessment focused on the factors of the teacher's preparedness for online teaching (Kennedy & Archambault, 2012; Kennedy et al., 2013; Rice, 2009), student interactions (Borup et al., 2013a; Moore, 1989; Roblyer & Wiencke, 2004; Thurmond & Wambach, 2004), and teacher perceptions of student engagement (Angelino, Williams, & Natvig, 2007; Fredricks et al., 2011; Fredricks et al., 2004; Kim, Park, Cozart, & Lee, 2015; Richardson & Newby, 2006). The next section outlines the context of the needs assessment investigation.

Context of the Study

The context of this investigation was a state-wide cyber charter school in one of the leading states in the country for K-12 cyber charter enrollment (Gill et al., 2015). A large, for-profit elementary and secondary online education provider sponsors the charter school. The school is a tuition-free, public school option for families throughout the state. Repeated denial of the initial charter application by the state caused significant disputes between the school and the State Department of Education. After several years, the school received a three-year charter in

the summer of 2017. With considerable effort, the school opened in the fall of 2017. As a consequence of the short timeframe before opening, the initial enrollment was markedly lower than expected, with 362 students enrolled in grades K-10 the first day of school. The growth throughout the school year was significant, and by the end of the first year of operation, there were 1244 students enrolled in the kindergarten through 10th grade program. Accordingly, staffing requirements increased throughout the first year and hiring continued through the middle of the school year. In the second year of operation, the 2018-2019 school year, the school continued to grow with the addition of 11th grade, as well as a Career and Technology Education program at the high school level. The third year of operation expanded to include 12th grade.

Establishing many of the policies and procedures occurred throughout the first year of operations. Moreover, the mission includes the intent to serve and support students receiving special education services and students at-risk. As a result, the school has nearly 20% of their student population receiving special education services, approximately 70% of the students from low socioeconomic backgrounds, and a significant percentage of students who are at-risk of failing. While dependent upon student grade level and academic performance, the model of the school involves students attending live instruction approximately one-third of the day with the remaining two-thirds of the student's day spent working on coursework or in interactive systems (Academic director, interview, Administrator, May 15, 2018). The school recognizes the importance of engagement as a precursor for student success (personal communication, sponsoring for-profit organization executive, September 2017). Conducting this needs assessment occurred during the spring of the first year of the school's operation. The researcher serves as the Treasurer and Secretary of the Board of Trustees and is not involved in the day-to-day operations of the school.

Purpose of the Study

The purpose of this needs assessment was to describe the problem of low student engagement in K-12 online classrooms. The correlation between low student engagement levels and remediating low levels of achievement underscore the value of investigating this problem (Fredricks et al., 2004; Henrie et al., 2015). The following four research questions initially guided the investigation:

1. What kind of development do teachers receive to teach in the online learning environment?
2. What types of interactions occur in the online classroom?
3. Based on teachers' perceptions, how engaged are the students in online classrooms?

After preliminary data analysis, the addition of a fourth research question addressed a theme that surfaced from the qualitative data:

4. What are the teacher and administrator experiences with parental learning coaches?

Table 2.1 identifies the constructs, definitions, and measures used to investigate these research questions.

Table 2.1 Constructs for Teachers' Perceptions of Low Student Engagement in Online Classrooms

Construct	Operational Definition	Measure
Teacher Development	Preservice education, onboarding for teachers new to online teaching, professional development (PD), and advanced credentialing in online teaching	Survey of online teacher preparation, including preservice education and PD. Questions adapted from of a survey of online teachers (Zweig et al., 2015) Interview with Academic Director who helps to establish PD opportunities for teachers.
Interactions	Learner-learner (i.e., collaboration, social interactions) learner- content (i.e., assignments, readings, projects), and learner-teacher interactions (i.e., direct instruction, facilitating activities, assignments, projects, social interactions)	Survey of online teacher perceptions of student interactions. Questions created using a rubric designed to assess and encourage interactions in distance education (Roblyer & Wiencke, 2004)
Teachers' perception of Student Engagement	Cognitive- student ability to interact and make meaning of the course content Behavioral- participation in school activities, including academic and extra-curricular Emotional- personal investment in learning	Survey of online teacher perceptions of student engagement. Modified from the online student engagement scale to reflect the teacher perceptions (Dixson, 2015) School records reflecting students in the student engagement referral process because of the low levels of student engagement. This is defined by the school as students either not logging in or not showing up for classes. Interview with Student Services Coordinator, who supports the tracking and monitoring of students through the student engagement referral process.
Teacher and administrator experiences with learning coaches	Observations, interactions, or perceptions of learning coaches	Interviews with Academic Director, Student Services Coordinator, and Teachers who work with the learning coaches

Methodology

Data collected for this investigation were from a cyber charter school. An exploratory mixed methods research design included a survey of teachers and evaluation of pre-existing, de-identified data on students in the student engagement referral process as a result of having low levels of engagement. Semi-structured interviews with administrators followed (Lochmiller & Lester, 2017). This mixed methods approach used descriptive analysis of quantitative data, in combination with thematic analysis of qualitative data (Braun & Clarke, 2014; Lochmiller & Lester, 2017; Miles, Huberman, & Saldana, 2014), to assess and reveal the areas for future investigation within the cyber charter school.

Sample

The entire population of 32 teachers within the cyber charter school received an invitation to complete the survey. Surveying teachers was appropriate for this investigation because teachers had direct interaction with students, understood the classroom structure, and could perceive the students' level of engagement. The teacher population included potential participants who were kindergarten through 10th grade teachers. Teacher invitations included participation in both an online survey and a follow-up interview. Fifteen teachers completed the survey, which reflected 47% of the teacher population, and two teachers were willing to avail themselves for interviews. One hundred percent of the participants had previous teaching experience, with 73% of the sample reporting being new to online teaching.

As depicted in Table 2.2, the teacher population was primarily female (93%), White (100%), and well-educated, with 87% holding a master's degree. The range of teacher ages included the largest number of participants between 35-39 years (40%), followed by those

between 40-44 years (20%), and the remaining teachers were distributed evenly between 20-29 years, 30-34 years, and 45-49 years. None of the teachers reported being 50 years old or older.

Table 2.2 Teacher Population

Demographics	Teacher Population
Female	93%
White	100%
Hold a master's degree	87%
Age (35-39 years)	40%
Age (40-44 years)	20%
Age (20-29, 30-34, 45-49 years)	13% respectively

All teachers had previous experience with teaching in traditional face-to-face classrooms, with almost three-quarters reporting one year or less experience teaching online. Eight teachers reported teaching at the elementary level, seven in middle school, and seven in high school, reflecting a balanced distribution of the grade levels taught. Further, most were teaching required core subjects (93%), with 11 reporting teaching mathematics, six science, seven English/language arts, and seven history/social studies. Of the teachers, 53% indicated spending between six and 10 hours preparing for synchronous class time, and 27% spending between 11-20 hours preparing, which reflects considerable time planning and preparing for classes each week. According to the existing research in the field, this sample accurately represents online teaching staff, and the participants were appropriately representative of the larger population, as elementary, secondary, and special education teachers across all core content areas responded.

Using purposeful sampling, the researcher chose two administrators, the Student Services Coordinator and the Academic Director, to participate in semi-structured interviews (Lochmiller & Lester, 2017). The Student Services Coordinator was included because he oversaw the engagement referral process for students and was knowledgeable about the criteria established by the school to identify when students become disengaged. Further, he had an appreciation for the

extent to which student engagement was problematic within the school. Choosing the Academic Director occurred because he knew about teacher preparation, the support offered to online teachers, and the ways teachers work to engage students in the online classroom. Including these two administrators provided insight into policy, practice, and structure of the school, as well as the programmatic response to the lack of student engagement.

Measures and Instrumentation

The creation of the online survey involved bringing together components of three distinct existing instruments aimed to address the specific constructs of the initial three research questions. Piloting the survey with educators at other online schools ensured the newly created instrument was cohesive and comprehensive. The next section outlines the creation and piloting of the teacher survey.

The online teacher survey. The online teacher survey focused on three constructs: teacher development for instructing online, the types of interactions that were occurring within the online classrooms, and the teachers' perceptions of student engagement. The operational definition of teacher development included preservice education, the onboarding process for teachers new to online teaching, professional development to support teachers, and advanced credentialing in online teaching. An existing survey instrument developed and implemented at Wisconsin Virtual School served as the basis for the first part of the survey focused on teacher development for teaching online (Zweig, Stafford, Clements, & Pazzaglia, 2015). The operational definition of interactions within the online environment used Moore's (1993) transactional distance theory as described by the interactions between learner-learner, learner-content, and learner-teacher. A rubric designed to evaluate and increase interactions in distance learning served as the foundation for the questions focused on interactions (Roblyer & Wiencke,

2004). There were five criteria evaluated in the original rubric, including the social and rapport building interactions, instructional design to facilitate interactions, technology interactivity, student engagement, and teacher engagement. The creation of the survey included the criteria focused on social and rapport building, instructional design, and technology interactivity.

The survey questions focused on the teachers' perception of student engagement were modified from the existing Online Student Engagement Scale (Dixson, 2010, 2015). The development of this scale focused on engaging active learning, and the differences in the active learning opportunities that are engaging for students at different levels, and the types of student-student and student-instructor communications reported by students experiencing differing levels of engagement (Dixson, 2010). The operational definition of student engagement was the teachers' perceptions of student engagement based on the four criteria established in the original instrument of skills, emotion, participation, and performance (Dixson, 2010, 2015). The survey included 30 questions: 24 closed-ended questions and six open-ended questions. (See Appendix A for the full survey). Fifteen questions inquired about teacher development for teaching online, including their preservice education, onboarding in an online school and professional development opportunities; three concentrated on interactions that occur within the online classroom; one matrixed question with 16 criteria focused on teachers' perceptions of student engagement; and six questions investigated the background of the teacher.

Piloting of the survey occurred in two stages. The first two sections on teacher professional development and interaction were piloted with two online educators at a different cyber charter school within the same state to clarify the structure and meaning of the questions (Presser et al., 2004). Question refinement after the piloting of the survey included rewording unclear questions, defining unclear terms, adjusting the time frame selections available for

specific answers, and eliminating the question numbers to provide a progress bar instead. An additional item was added to the end of the survey as well, which asks participants if they would be willing to engage in an interview or focus group regarding the questions included in the survey.

Piloting the final section regarding the teachers' perception of student engagement occurred with four online educators at a state-wide online school in a different state. The focus of piloting this section was to ensure the integrity of the questions remained intact as the format shifted from the students' level of engagement to the teachers' perception of the level of engagement. Piloting of this section of the survey with four online educators resulted in the addition of an *Unknown or Not Applicable* to the Likert scale options, clarification of a few key terms, and elimination of a duplicate question. Piloting of each section of the survey, followed by cognitive interviews (Desimone & Le Floch, 2004) and the addition of necessary demographic information, resulted in the final version of this survey.

Teacher development. Preparing teachers for the responsibilities involved with teaching online can occur in four different ways: pre-service education, the onboarding process once the teacher has accepted a position in an online school, professional development, and advanced credentialing specifically focused in online teaching. The original survey on teacher preparation and professional development contained 19 closed-ended questions focused explicitly on the preservice preparation and professional development of K-12 online educators. Validation of this original teacher preparation survey instrument occurred through several processes, including cognitive interviews with online teachers, advisement from a teacher advisory board, and reviews by researchers with demonstrated survey expertise. According to the lead researcher,

"We did not do any formal reliability analysis because we were not measuring particular constructs" (J. Zweig, personal communication, April 30, 2018).

While this pre-existing survey was largely on target with the needs of this current investigation, the omission of a few questions and revision of other questions resulted in a more appropriate survey for this new context. The pilot survey remained in its original online form. The teacher preparation questions were predominantly in multiple choice format, with a few Likert scale matrix tables noting the extent of agreement with statements. Questions in this section included items such as *When you started working at your current school, how much training was provided to you on online teaching before you started teaching?* And *What type of professional development or training do you think would best help you address the challenges that you face in online instruction? Please select all that apply* (Zweig et al., 2015).

Online interactions. There was no pre-existing survey to evaluate the facilitation of interactions within the online learning environment. Instead, research revealed a rubric designed to "assess and encourage interaction in distance courses" (Roblyer & Wiencke, 2004, p 25). This rubric demonstrated high levels of inter-rater reliability across student raters from each online course, with Cronbach's alpha levels reported as .64, .88, .93, and .95. Guidelines for Cronbach alpha scores suggest that .7 is an acceptable rate, indicating high inter-rater consistency (Field, 2013). To assess the concurrent validity of the rubric, the comparison between the rubric and course evaluation resulted in Pearson correlation scores of .63, .72, .64, .48 for each course (Roblyer & Wiencke, 2004). A correlation score between zero and one indicates a positive correlation (Lochmiller & Lester, 2017), thus suggesting a correlation between the rubric and post-course evaluations. Additionally, correlations between each element within the rubric and post-course evaluations found the most significant correlation between evaluation scores and

student engagement (Roblyer & Wiencke, 2004). The survey questions focused on interactions were multiple choice, using the criteria from the original rubric by Roblyer and Wiencke (2004) to establish the various selection options. This section included questions such as, *To what extent do you build classroom structures that facilitate interactions?* (See the remainder of the survey in Appendix A)

Teacher perception of student engagement. The basis for the student engagement section of the survey was an online student engagement scale intended for students in higher education (Dixson, 2015). Modification of the original instrument adapted the assessment of student engagement to the teacher perspective, with a five-point Likert scale criterion shifting original terms from Dixson's (2015) scale such as *not at all characteristic of me* to *not at all characteristic of most of my students*. Piloting of this section of the survey with four online educators in a state-wide online school resulted in minimal changes, including adjusting for redundancies and adding a point on the Likert scale to indicate *Not Applicable or Unknown*, clarification of a few key terms, and elimination of a duplicate question.

The creation of the original scale was through a review of existing measures of student engagement, a focus group to revise measures for an online environment, as well as piloting and assessing the instrument (Dixson, 2015). The assessment of the instrument determined validity in four factors of student engagement: skills, emotional, participation, and performance. Factor analysis conducted by the original researcher revealed 19 items as relevant to the four factors, with a Cronbach alpha score of .91. The high score supported the validity of the 19 items that were the resulting survey. Additionally, the pilot survey revealed strong reliability of .95. The teachers' perceptions of the student engagement section of this survey included the extent to which students *put forth effort* and *stay up on the readings* (see Appendix A for the full survey).

The remainder of the needs assessment survey consisted of background questions about the participants' teaching experience and demographic information, as well as a series of open-ended questions. The background questions included multiple choice items that outlined how long the participant had been teaching, what grade/age level they taught, classes they taught, and the weekly time they spent preparing for synchronous class time. The open-ended questions provided participants with an opportunity to expand on the effective strategies they use to facilitate student interactions, the most challenging aspects of teaching online, and their willingness to participate in a follow-up interview regarding the survey.

Interviews with administrators. The interview protocol for each administrator included approximately ten structured questions within a semi-structured format to allow the opportunity to explore perspectives that may not have occurred to the researcher initially but surfaced while interviewing the participant (Lochmiller & Lester, 2017). Interviews triangulated the quantitative results collected in the survey (Lochmiller & Lester, 2017). The interviews focused on the problem of low student engagement in online learning within the school, as well as the professional development offered to teachers by the school. Questions addressing low levels of student engagement targeted the criteria used to identify students who were disengaged as well as the process that the school follows to try to increase online engagement levels of those students. Questions included, *What is the protocol for addressing lack of student engagement (in online environments)?* And *Do you have a sense of why some students become disengaged?* (See Appendix B for full focus group and interview protocol). Questions about the professional development offered to teachers focused on the frequency and topics covered in the professional development provided by the school. Questions included, *How often is professional development (in online instruction) offered to teaching faculty?* And *Are there professional development topics*

that teachers report as having a direct impact on their teaching practice? (See Appendix B for full interview protocol.)

Pre-existing, de-identified student data. In addition to the administration of the survey, the school provided a list of pre-existing, de-identified student data regarding students who were in the engagement referral process. Identification of low levels of student engagement was defined by the school in several ways: the student not logging in to the online learning system for three consecutive days, which is considered an absence from school; the learning coach not logging in to the online learning system for three consecutive days; or not having completed work and not having communicated with the school regarding exceptional circumstances. While there are limitations with measuring participation according to the frequency and duration of time spent in the learning management system, the state holds an attendance requirement for traditional brick and mortar schools, and modification for online schools has not yet transpired. Consequently, the school decided to track daily attendance as required by the state by monitoring the frequency with which students log in to their online management system.

Further, the school uses this attendance measure, in conjunction with task completion, as their measure for determining engagement. Tracking of students demonstrating low levels of engagement occurs through an engagement referral process intended to support students and families, thereby increasing engagement. Identification of students for the engagement referral process can happen through two primary methods, namely the teacher or attendance coordinator noting three absences. Weekly meetings between teaching staff, advisors, counselors, and student services representatives provide faculty and staff an opportunity to communicate regarding performance and engagement, identify students who may need additional supports, and track students in the engagement referral process. Analysis of the data on students in the referral

process for low levels of engagement supported the assessment of the extent to which this concern was problematic.

Data Collection Procedures and Analysis

Teacher survey. There were several points of contact throughout this spring to initiate recruitment and participation of teachers in the survey, including speaking to teaching staff during a virtual faculty meeting and a follow-up email sent shortly after that. Given that this is a virtual school, the teaching staff received an email with a link to the survey. Following Johns Hopkins University's Institutional Review Board (IRB) protocol, the first question of the survey asks for participant consent. Electronic dissemination of surveys was effective and provided ease of access for a population that reliably has access to the Internet (Dillman et al., 2014). Implementation of Dillman's Tailored Design Method for mail and online surveys (Dillman et al., 2014) involved several specifically timed communications with teachers to encourage participation. The initial email provided clear communication to teachers and indicated the amount of time the survey should take. The researcher sent a second communication after four days with notification of the schedule for the survey closing, and a final reminder communication was sent 24 hours before the survey closing.

Interviews. Securing written informed consent occurred before the interviews using the Johns Hopkins University approved consent form. With the permission of the participants, the researcher recorded the audio of the interviews with a voice recorder phone application and kept field notes on body language and non-verbal expressions (Lochmiller & Lester, 2017; Miles et al., 2014). The researcher conducted administrator surveys in person at the school. Given that the school is state-wide, and teachers live throughout the state, interviews with teachers occurred virtually.

The use of descriptive analysis supported the interpretation of the closed-ended question results from the survey of online teachers (Lochmiller & Lester, 2017). The researcher used the frequency data collected from Qualtrics to analyze and report data for each question and construct. Prior to analyzing the qualitative data, the research suggested a-priori codes related to the teachers' readiness to teach in an online classroom, the parental role, and minimal opportunities for interactions between student to student, student to teacher, and student to content. The open-ended survey questions, the semi-structured follow up teacher interviews, and semi-structured interviews with administrators were transcribed and analyzed by hand by the researcher. Repeated review of data occurred until the identification of a priori, in-vivo, and emergent codes were apparent across qualitative data sources. Then the researcher reviewed data several more times, coded for key terms, and thematically analyzed (Braun & Clarke, 2014; Lochmiller & Lester, 2017; See Appendix B for semi-structured interview protocol). Validation of qualitative data occurred through participant triangulation in which interviews with several individuals identified similar themes (Lochmiller & Lester, 2017).

De-identified student data. Collection of pre-existing, de-identified data on student engagement occurs throughout the year as students identified as disengaged progress through the student engagement referral process. The researcher received this information near the end of the school year and incorporated the data into this needs assessment. Interpretation of the pre-existing, de-identified data provided by the school involved evaluating frequency in each grade level throughout the year.

Findings

Data analyzed from the survey administration, de-identified data on students in the referral process for engagement difficulties, and semi-structured interviews follow. Given the

exploratory research design, the major themes that came from the survey were teacher development, interactions, and student engagement. De-identified data on students in the referral process for engagement difficulties provided additional evidence of the extent to which the issue of engagement is problematic. The qualitative findings expanded on these themes and offered additional insights into factors that may contribute to the challenge of supporting teacher development in this school, some of the strengths and challenges of interacting within the online classroom, and the factors that may contribute to student engagement levels such as accountability and participation. In addition to the themes outlined above, the qualitative data identified family involvement and teacher responsibility as factors influencing the level of engagement of students. Codes related to teacher development included professional development, best practices, and new school. The theme of interactions included communication challenges and synchronous/ live/ connect sessions as codes. Student engagement included the codes of task completion/ student accountability, participation/ attendance/ truancy, and school choice. Family involvement included the code family/parental/learning coach support. Finally, teacher responsibility included the codes control, attending to students, and relationships (see Appendix C for complete codebook).

Before analyzing qualitative data, the a priori codes outlined above included teachers' readiness to teach in an online classroom, the parental role, and minimal interactions, which suggested the anticipated themes included teacher development and inadequate interactions. During the initial analysis of teacher and administrator interviews, however, the repeated phrases of "best practices", "new school", and "school choice" were identified across qualitative data sources, and these became in-vivo codes (Lochmiller & Lester, 2017). A careful review of the data revealed several emergent codes as well, including professional development,

communication challenges, synchronous (live) sessions, lack of support from the parent or learning coach, task completion/ student accountability, participation/ attendance/ truancy, teacher control, attending to students, and teacher-student relationships. Analysis of these a priori, in-vivo, and emergent codes indicated five main themes: teacher development, interactions, family involvement, student engagement, and teacher responsibility (see Appendix C). Given that the school operates on a three-person model for student success, and the identification of the three additional themes of family involvement, student engagement, and teacher responsibility reflected their institutional model.

Teacher Development

In alignment with the first research question, the development of online teaching staff is a significant consideration in understanding the support and experience teachers may have in working with and engaging their online students (Kennedy et al., 2013). Teachers reported that during their preservice education and student teaching experiences, 40% of them did not receive any structured or unstructured preparation in online teaching. Of those who did receive preservice education in online education, 27% reported having received 41+ hours of education, and another 20% reported one to two hours of education to become an online educator. Given the discrepancy in responses to this question, it is unknown whether there were different interpretations of the question, with some participants indicating actual hours and other participants indicating the number of credit hours of preservice education. Approximately one-third reported no professional development in online teaching after their preservice education but before teaching online. However, all of the participants reported receiving professional development to teach online once they assumed their role as online educators. This suggests that while many of the teachers in this school received limited professional learning opportunities

focused on online teaching prior to being employed by this school, the school actively engages in the provision of professional learning to support the development of teacher practices.

Upon starting to teach at this school, almost 95% of teachers surveyed reported spending more than a week during the onboarding process, and the remaining response indicated having spent three to five days onboarding. Regardless of whether teachers spend three to five days or more than a week in the onboarding process, all teachers were participating in ample learning opportunities when they started working at this school. Nearly all participants (93%) reported participating in structured or unstructured professional development specifically focused on online teaching. With extensive instruction, 40% of participants noted 41 hours of professional development since the start of this school year, and 33% reporting 20-40 hours. Teachers indicated frequent opportunities for both structured and unstructured professional development. Organized learning opportunities, such as graduate courses or workshops, defined the structured professional development opportunities. Unstructured professional development included opportunities to learn from a mentor, online forums, or searching the Internet. Of the surveyed participants, almost three-quarters engaged with unstructured professional development within the past week, 27% reported structured professional development within the past week, and another third reported structured professional development within the past two to three weeks.

The formats for the professional development sessions focusing on online instruction were varied, including peer coaching/mentoring, participation in an online course, and advice from a colleague. Moreover, nearly two thirds of the professional development on online instruction were delivered fully online, approximately one third facilitated and one third not facilitated. All teachers surveyed reported professional development in facilitation, and almost all teachers reported training in assessment and data use (93%), classroom management (93%),

professional practice (93%), and technology (87%). Most teachers surveyed reported that they felt the professional development and training they participated in prepared them to teach online. However, approximately half of the teachers indicated that they could benefit from additional professional development and training in online instruction.

Teachers indicated a fair amount of confidence in using student data to modify their instructional methods, with 63% of surveyed participants reporting the use of student data to modify instructional methods as "not at all" a challenge. Teachers also noted that managing their online classroom was not a significant concern, with classroom management noted as "not at all" challenging by 88% of respondents. Similarly, 69% indicated that setting course expectations was "not at all" challenging.

When considering the indication that teachers could benefit from additional professional development and training in online instruction, teachers were asked about specific challenges they encountered related to their online instruction. In open-ended questions, other challenges noted by the teachers included "working with the special needs population," "inappropriately aligned curriculum/assessments," and "I struggle to complete the tasks within the course of the work week." When teachers further reported on the aspects of teaching online that they find most challenging, issues of student accountability, engagement, and assignment completion were prominent themes.

Teachers felt that additional structured professional development opportunities were the best way to support them in addressing the challenges of working with students with special needs, supporting students in assignment completion, and keeping students engaged throughout the course. Teachers reported that they would want additional unstructured professional development in engaging students' parents, getting students to interact with each other, and

supplementing content for online courses. Teachers felt confident that they did not need structured or unstructured professional development in managing their time, balancing their workload, or feeling isolated from colleagues. Teachers thought that the most commonly recognized areas of online instructional practice that instructors needed during preservice education were in the areas of technology, working with students with special needs, and professional practice. Professional practice reflected the professional knowledge base that the teachers had for teaching online, and their ability to apply their knowledge, skills, and experience to support students in learning. Further, teachers indicated the leading areas of importance to address before teaching online, but after preservice education included online course development, facilitation, and course customization. Finally, teachers reported that professional development in course customization could continue while the teacher was teaching online, as could leadership skills. The qualitative data revealed that the newness of this school likely affected the school's ability to support teacher development, which the next section outlines.

New school. Some of the more challenging aspects of being a new school related to the teachers and teacher development. As previously mentioned, this is a tuition-free, public charter school. This school received its charter in the summer of 2017 and opened in the 2017-18 school year within a very short timeframe. Consequently, the newness of this school was a recurring theme across interviewed participants. Reflection of the first-year start-up mode of the school occurred in a variety of ways, including policies and procedures still being established, lack of communication with teachers, an issue with understaffing, an unclear division of responsibilities, and lack of curriculum mapping and pacing guides. The Student Services Coordinator indicated, "we were just kind of learning and new, and there were just things that we didn't know, and we didn't know that we didn't know them" (Student Services Coordinator, interview, May 31, 2018).

Further supporting the idea that there were inherent challenges for this new school, during an interview one teacher stated, “being the school’s first year, I think it’s all still like we don’t know. We have to figure this out (laughter). Let’s figure it out as we go” (Teacher, interview, May 22, 2018).

All teachers were new to this school; most of them were new to online teaching, with many of them hired mid-year as the school enrollment grew. Many of the challenges of being a new school had the potential to affect teachers’ development as online educators, and their ability to meet student needs. Teachers expressed that, “We don’t have very structured pacing guides and curriculum maps yet, so we’re kind of winging it to some extent” (Teacher, interview, May 22, 2018). Moreover, teachers expressed frustration that by the end of May, which was close to the end of the school year, they “have not been given any criteria from administration as far as elementary retention. I know we’ve kind of reached out and asked a few times… I really have nothing to base it on. I mean, I definitely have a handful of kids who have done so little that it seems like there’s no possible way they can pass” (Teacher, interview, May 22, 2018). Whether the policy regarding students progressing to the next grade or not was established or not being communicated with teachers was unclear. Regardless, the newness of the school had implications for the extent to which support for teachers was available for their daily practices and development as online educators.

Interactions

In addressing the second research question, interactions between students and their teachers, among peers, and with the content in the online classroom help students to engage in the learning process and reflect the level of engagement in classroom activities (Dixson, 2010; Roblyer & Wiencke, 2004). Teachers revealed in the survey that getting students to interact with

each other was a common difficulty. Thirty-one percent of teachers reported that getting students to interact with each other was challenging "to a great extent," and another 50% indicated that getting students to interact was challenging "to some extent." A small percentage of teachers in the sample (8%) do not encourage interactions or include activities that require interactions. The majority of teachers, 62% of those surveyed, reported encouraging regular exchanges and social interactions both among peers and between students and their teachers. However, when asked the extent to which they build classroom structures that facilitate interactions, only 15% reported that the course design promoted interactions among peers and between students and teachers. These data contrasted with the question regarding the extent to which instruction designed to promote interaction occurred, in which 62% of teachers reported that in addition to communicating with their instructor, instructional activities that they planned required students to communicate with each other in small group discussions or pairs. Moreover, 21% of teachers indicated that instructional activities required students to develop products together by working cooperatively and sharing results and feedback with others in their class.

When asked to evaluate the extent to which the technology promoted interactions, most teachers responded that the technology used reliably allowed for live audio communications. Additionally, approximately half of the teachers surveyed reported that technology reliably allowed for live video communications as well. However, this report contrasts with classroom observations, which reflected difficulties with the online learning system and the technology in place. Consistently throughout classroom observations, teachers of larger classes would opt to use fewer of the tools available within the online classroom because students experienced a delay in their receipt of classroom information. Moreover, during an observation, one teacher indicated to her class that if she was not in the online classroom later that day, they did not need to stay

because she had been unable to access the online learning system yet that day. In this technology-based school, technology sometimes seemed to be an obstacle to student engagement and learning. Moreover, during the interview with the Academic Director discussed later in this chapter, he stated, "A skilled teacher has a lot of workarounds for when the technology crashes" (Academic Director, interview, May 15, 2018).

Data collected regarding strategies to facilitate interactions within online classrooms revealed that group discussions during class connect sessions, group work, small break out rooms, and sharing work with peers were effective. Additionally, although with somewhat less confidence, most teachers reported that they believe their students had a sense of community within the classrooms. While only one teacher did not believe that students felt a sense of community, a few teachers responded to the open-ended survey questions with, "I hope so. I encourage students to share feelings, experiences about the content being learned" and "I hope so. I want them to be able to ask questions and work through the answers together as a team." Other teachers indicated there was a sense of community because "They use the emojis and chat to congratulate and encourage each other," and "they seem comfortable with each other, and many of them attend help sessions to catch up on work or just to stop by and say hello."

Experiences with learning coaches. Exploring the experiences with parental learning coaches is important in understanding the interactions that occur within online classrooms. Teachers and administrators recognized family support as a key to student success in the online classroom. In an ideal scenario, "the kid has somebody standing behind them… really driving it home that you need to stay, you need to go, we want to do this. But it's about the will of the family…" (Academic Director, interview, May 15, 2018). However, as one teacher indicated, opting to learn online is often "without really taking into consideration the amount of work that

ends up falling on the parents too" (Teacher, interview, May 22, 2018). Moreover, because this is a state-wide school, there are people from a variety of backgrounds with a wide range of computer and Internet knowledge and skills. At times, families with less technology savvy "get here and they just become overwhelmed, and they just shut down" (Academic Director, interview, May 15, 2018).

While in face-to-face learning environments, the level of parental involvement required can be fairly low. However, in this online learning environment, because the learning coach is in person with the student, there is an expectation that parental learning coaches will be highly involved in their child's learning. The survey results revealed that with regards to engaging students' parents and guardians, 31% of teachers noted a challenge "to a great extent," and 56% noted a challenge "to some extent." Parental learning coaches who are unprepared for the level of involvement in their child's learning required by the school frequently become less responsive or even evasive. Teachers and administrators reported similar feedback about parental communications, indicating, "the parents who communicate with me consistently do so. And the parents who don't, who don't want to hear from me, sometimes hang up on me or screen my calls and ignore my emails" (Teacher, interview, May 22, 2018). Further, while having the support of the learning coach from home is an essential component to student success, many parents fail to provide this support to their children, especially as they get into middle and high school. A fifth-grade teacher reported that "for the most part, I have very few learning coaches that are working with their students during live and in our independent lessons" (Teacher, interview, May 22, 2018). This refers to both the live, synchronous sessions with the entire class as well as smaller group sessions and office hours.

Additionally, an administrator noted that "by the time you get to sixth, seventh grade most of those kids are left home alone and on their own" (Academic Director, interview, May 15, 2018). While all interviewed recognize that parental involvement is key to student success, there was significant variation in the actual investment from parents. While some may be uninvolved and evasive, others may be overly involved and completing work for their students or allowing their students to mark their own work as complete. The level of family support and involvement has a direct impact on the level of engagement and accountability required by the student.

Student Engagement

In response to the third research question, assessing the teachers' perception of the level of student engagement is a foundational step in increasing the level of engagement experienced by the students in an online classroom. Figure 2.1 depicts the results of the matrixed question on engagement in the survey. When evaluating student engagement, teachers reported on 16 different criteria that reflect their perception of student engagement levels. These criteria included items such as "staying up on the readings," "finding ways to make the course interesting for themselves," and "put forth effort." The most consistently reported response was that the criteria were "not really characteristic of most of my students" for the domains of "finding ways to make the course more interesting for themselves," "take good notes over readings, Powerpoints or video lectures," "finding ways to make the course content relevant to their lives," and "really desire to learn the material." The next most commonly reported response

was “moderately characteristic of most of my students,” which was relevant for the criteria of “stay up on the readings,” “help fellow students,” and “show proficiency to tests and quizzes.”

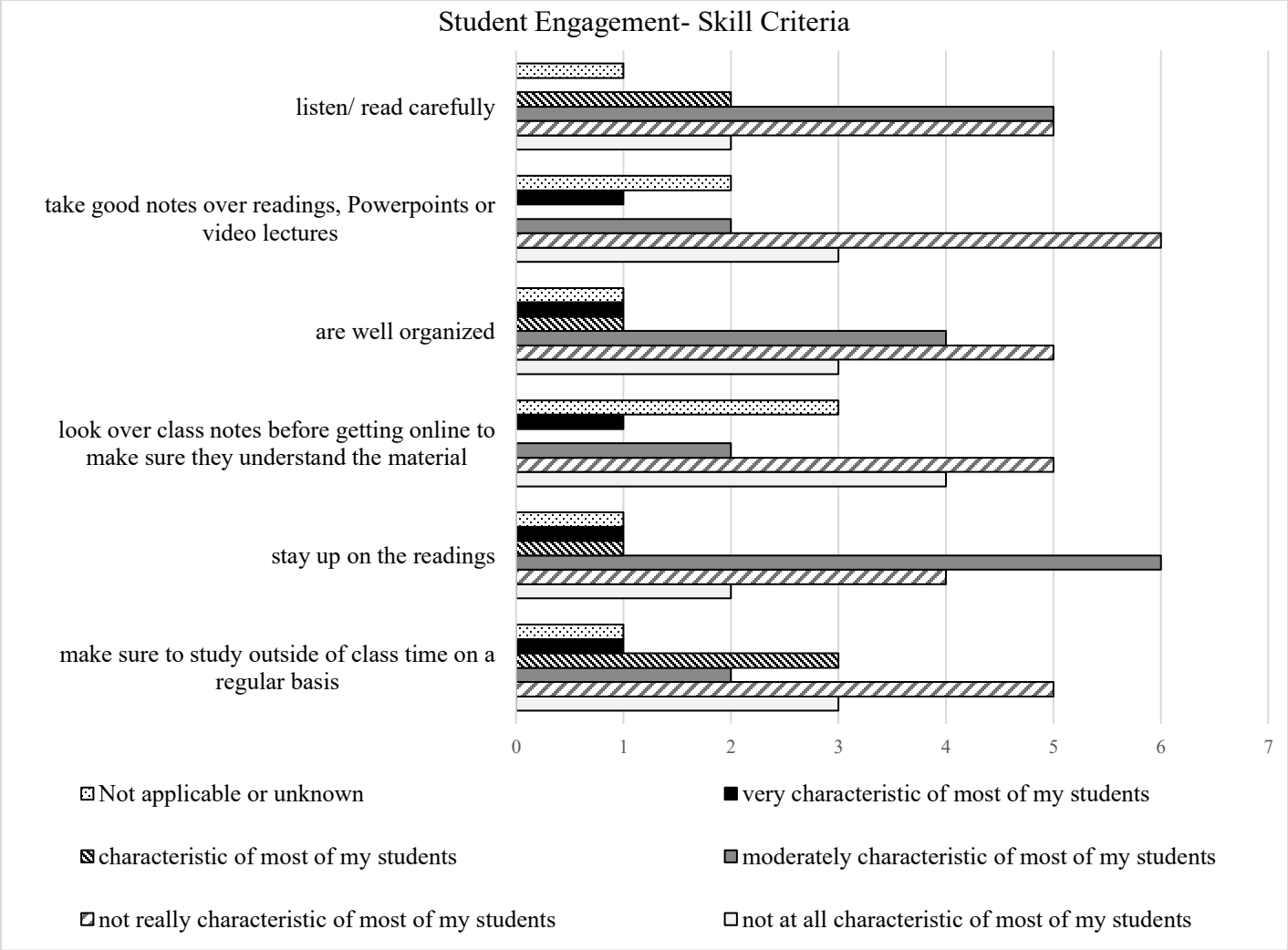

Figure 2.1. Teachers’ perceptions of the level of engagement of their students.

When considering students’ ability to “stay up on the readings,” teachers indicated the highest level of “moderately characteristic of most of their students” across all criteria. However, when looking at the criteria of “listen/ read carefully,” most teachers reported that this was “moderately characteristic of most of my students” or “not really characteristic of most of my students.” Teachers further indicated that “take good notes over readings, Powerpoints or video

lectures" had the highest reporting of "not really characteristic of most of my students." Additionally, the results suggest that teachers may not have known what exactly was happening outside of live synchronous sessions as "look over class notes before getting online to make sure they understand the material" had the highest report of "not applicable or unknown."

The results from the de-identified data provided by the school revealed that students demonstrating low levels of engagement was a significant problem. While the actual number of students enrolled varies slightly from day to day, there were approximately 1,250 students enrolled when analysis of the data occurred, and a total of 325 students, or 26% of the students, were referred to administrative support for lack of engagement throughout the school year. The tracking system used is challenging, with multiple levels of intervention displayed in one spreadsheet, including 14 different potential classifications for the student across seven different points of intervention. These data may reflect different levels of support in various departments in the organization. Consequently, notes might reflect being closed in one area yet escalated to administrative intervention in another part of the spreadsheet. Moreover, because this is a living document, not every student is marked resolved or active. When attempting to clarify this aspect of the data with the Student Services Coordinator, he indicated that this inconsistency might reflect either a new referral or a hand-off between departments. Ideally, it would be helpful to understand how many students were active, resolved, or monitored in the referral process. Unfortunately, grade level break-down throughout the year and the number of students who were marked "Closed-Referral Reason Resolved" was the only data able to be ascertained. See Table 2.3 below for a depiction of these data.

Table 2.3 Students in the referral process for low levels of engagement

Grade Level	Total Students Enrolled at the End of the School Year	Students in the Referral Process for Low Engagement	Percentage of Students in the Referral Process	End of Year "Closed-Referral Reason Resolved"
K	93	20	21%	3
1	66	10	15%	1
2	68	7	10%	1
3	74	7	9%	0
4	75	22	29%	0
5	102	20	20%	7
6	137	54	39%	5
7	158	57	36%	3
8	135	44	33%	5
9	220	56	26%	5
10	116	28	24%	2
Total:	1244	325	26%	32

In addition to the secondary data from the school and the survey results, qualitative data revealed that student accountability likely influenced the level of engagement of students. The next section outlines student accountability as a contributing factor to student engagement within online classrooms.

Student accountability. In this online school, the intention is for approximately one third of the students' day to be in synchronous class sessions, and the remainder of the day dedicated to completing independent work. Teachers monitor several criteria, including students' attending live synchronous sessions, logging into their online learning system, and progressing through lessons. However, results from the survey revealed that some teachers reported difficulty with students not logging into the online learning system to attend class or complete work. Others reported being challenged by "trying to get every student to participate," and supporting the student to "try their best" or "be self-motivated." All teachers found that getting students to complete assignments was challenging either "to a great extent" or "to some extent." Course completion also posed a significant challenge. Helping students take responsibility for their

learning, perhaps an underlying concern for both assignment and course completion was noted as problematic as well. Of the respondents, 63% indicated that supporting students in taking responsibility for their learning was a challenge "to some extent." One teacher suggested that because there is a physical distance between teachers and their students, it can be challenging to ascertain the students' accomplishments:

> Since I am not physically there with them, I don't know how much of that is them truly completing the work and mastering it and how much of it is just a learning coach kind of clicking through and marking things complete… Or I know a lot of the fifth graders… have their parents' username and password (Teacher, interview, May 22, 2018).

Specifically, it can be difficult to know the extent to which students are getting help from their learning coach, and the extent to which they are active when they log into their online learning system or a live synchronous session.

According to teachers and administrators, students frequently log in so that they receive credit for attending class, but then minimize their window to play a game or walk away from their computer. The expectation is for students to have a high level of independence with their online classes, completing assignments independent of class time, which can be a challenge for elementary and secondary students. As one teacher pointed out, "They're in second grade, so it's not like they're going to sit down at a computer by themselves and be like, 'Oh, I have to do this school work' (laughter)" (Teacher, interview, May 22, 2018).

Many students struggle with completing their assignments, and the family and teacher roles are essential in supporting student accountability. One teacher provided insight into how she holds students accountable:

> I have some general help sessions that anybody can attend, but some of my kids who fall into that group where they're kind of inconsistent, they come to class, but they're not completing any independent work, I have a separate session that I invite- I kind of lump those kids into. And when they come in I have them screen share with me. I put everybody in their own breakout room, and they screen share with me and work through their daily plan. And when they actually come (laughter)- you know, again, that's part of the trouble with that group- but when they actually come, I think just knowing that I can see what they're doing on their computer keeps them motivated. And they will work through the lesson and get a ton complete, which is great…. I keep them in there for as long as I can, and I've had kids stay as long as like, three or four hours and work through their screen share. So [for] some kids, that really is helpful for, I think, just being held accountable. (Teacher, interview, May 22, 2018)

The students this teacher was working with benefited from additional support and structure provided by this teacher, and consequently, these students were able to stay motivated and engaged more readily. However, this is just one teacher's strategy for increasing student task completion, and it is unknown whether other teachers are using different strategies or simply not holding their students accountable.

While providing a safe, supervised space for students to get their daily lessons completed may help some students, others enroll in this online school with limited intentions of engaging with the work. Some students are struggling with other life issues -- they may be young parents or need to work to help support their families. One administrator indicated, "So, we'll get people who come here, and they're just trying to maintain their SNAP [Supplemental Nutrition Assistance Program] or social security benefits or something like that. And that's just a vehicle.

So, they have very limited intentions of actually passing their classes; they're just trying to survive" (Academic Director, interview, May 15, 2018). Further, one of the challenges the school faces in working with this population of students is that the state law restricts the school's ability to withdraw students from the program: "The struggle is what to do when we've done what the state requires but we still can't reach the family. Can we withdraw them? Which we can't" (Student Services Coordinator, interview, May 31, 2018).

Moreover, the current attendance laws established by the state are specific to brick and mortar schools, and the administration has had difficulty gaining clarity from the state Department of Education about how to interpret these laws for an online environment. The school has taken the stance that attendance is demonstrated by showing up - logging into synchronous sessions or the online learning system - but this definition does not hold students accountable for task completion or progress through course content. Holding students accountable for their learning is a significant factor that can support and motivate students in engaging in the learning process in online classrooms, which directly links to a students' ability to accomplish achievements. The next section outlines school choice as a contributing factor to student engagement in online classrooms.

School choice. As discussed in the literature review in chapter one, the reasons for selecting an online school are varied and may affect the students' ability to engage in the online classroom. The idea that students enrolled in this online school were choosing to learn in an online environment surfaced repeatedly in the qualitative data. The Academic Director viewed this opportunity for choice as advantageous, suggesting that the effort required to complete the application process could serve as an obstacle for some prospective students, stating, "We have the advantage of somebody had to seek us out and actually go through the application process"

(Academic Director, interview, May 15, 2018). This mentality would suggest that students would be more likely to engage actively in learning. However, this same administrator also suggested that there were a wide variety of reasons that students may be pursuing an alternative to their brick and mortar school. He indicated that there were both students who left their traditional schools because they were victims of bullying and students who have left their traditional schools for multiple suspensions, noting the irony of serving both students who have victimized others as well as those who have been victims.

Moreover, the opportunity for educational choice was further delineated by the other administrator as well. He indicated that some students choose online learning for practical reasons: "So, if I'm in a situation where maybe my local school is horrible, or it's very far, those may be the primary reasons why I sign up for the school. Just those base-level needs" (Student Support Coordinator, interview, May 31, 2018). However, he also indicated that there is a wide appeal to selecting an online learning environment with

> people [are] just looking for something in [traditional brick and mortar] public education because it has just been a failure to a lot of families. And to be able to have an option to not go to a school if you don't like it, I think people will jump on it. But you don't want to just jump for the sake of jumping (Student Services Coordinator, interview, May 31, 2018).

There is a clear implication that learning online is not appropriate for all students as likely not all students are capable of being successful in online classrooms. Teachers who participated in follow-up interviews further elaborated on this notion, indicating, "I think a lot of them just kind of rush into the whole cyber school thing because they need something else" (Teacher, interview, May 22, 2018). While data from teachers and administrators did not directly

connect school choice with the level of engagement that students in online classrooms, this aligns with the data from the literature review in chapter one which suggests that previous performance is a predictor of future performance (Roblyer et al., 2008). Given that the majority of students enrolled in this school are at high risk of failing before selecting online learning, it may continue to be challenging to engage these students in their online classrooms. The school relies on a three-legged model that includes the teachers, students, and an in-person learning coach to support students in being successful. Exploration of the essential role that the learning coaches play is in the following section.

Additional Findings

The qualitative interviews revealed additional information that was not directly aligned with the research questions yet is important to include when considering the problem of low student engagement in online classrooms. The next section outlines the additional theme of teacher responsibility.

Teacher responsibility. As previously noted, the teacher plays an important role in ensuring student success and engagement. As suggested by one administrator, "the teacher would be the first line of defense just because they're expecting day to day [progress]" (Student Services Coordinator, interview, May 31, 2018). However, the teachers only have control over what they present during their live lessons and have no control over the online lessons the school purchases from a provider. According to one administrator, the role and responsibility of the online teacher mimic the role and responsibility of the brick and mortar teacher. He suggests this includes:

> … little checks of understanding so you know that you're going to be held to account, that you're going to have to answer, that there's going to be some interaction going on, the

> teacher's friendly, they're able to change the intonation of their voice, they're able to bring that personality through the screen here. Those are the classes where you're going to get higher participation, generally better grades; students are a lot more willing to participate. (Academic Director, interview, May 15, 2018)

When asked to clarify how he determined best practices in the online classroom, he indicated that the sponsoring for-profit organization had established a department to investigate the best practices in their institutions across the country, and these criteria were from their findings. However, this is in contrast with the perspective of one teacher who reported:

> I love cyber school (laughter). I like the atmosphere better than brick and mortar just because it's like there's more that I can't control… I can't control how many kids show up on my online lessons, where in a brick and mortar it was like I'm stressing because these three kids aren't participating the way they should be. And that was my job in brick and mortar. And now it's kind of like, 'Well, I'll do the best I can, but it's out of my control.' (Teacher, interview, May 22, 2018)

This approach to online teaching suggested that the role of the teacher in this online school has shifted from the brick and mortar school. There is a recognition that there is a limited extent to which teachers can reach students. This limited expectation could likely reflect the newness of the school, and that the establishment of best practices to promote an effective culture with clearly outlined responsibilities for teachers was not yet in place. The three-person model this school uses, with the student, parent, and teacher playing equally essential roles in students' success, is inevitably impacted by this teacher's perspective.

Discussion

The data collected from this needs assessment demonstrated that the level of engagement among the students in this online school warrants further investigation. The mixed methods approach provided both quantitative and qualitative data regarding the development of teachers, the interactions that occur within online classrooms, the teacher perception of student engagement, and family involvement. Moreover, the use of mixed methods in this investigation allowed for triangulation of data that further elucidated the problem. After reviewing the results of this needs assessment, revision of the conceptual framework clarified the factors that may be relevant in crafting an intervention to increase the level of student engagement in online classrooms. The revised conceptual framework is depicted below in Figure 2.2. While several factors and themes surfaced throughout this investigation, the following sections provide information on possible intervention opportunities.

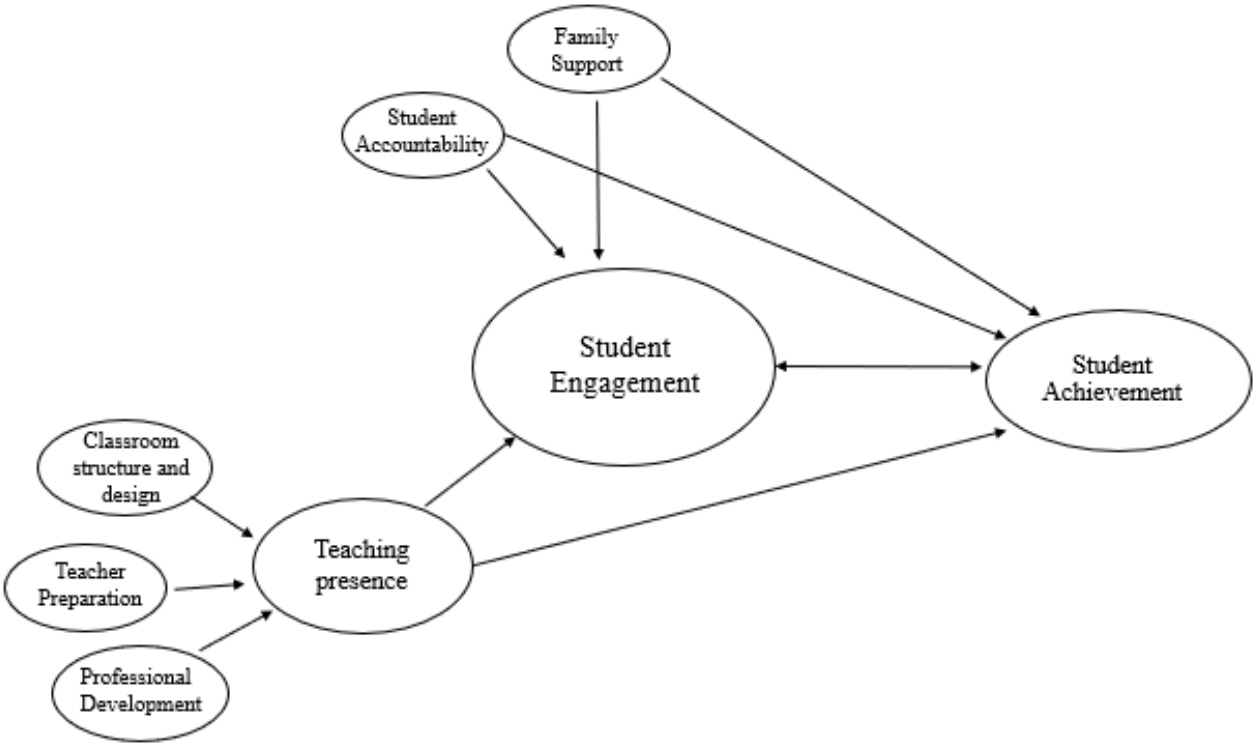

Figure 2.2. Revised conceptual framework for cultivating student engagement in K-12 online classrooms.

Increasing Family Understanding and Engagement

This school operates on a three-person model that involves the student, the teacher, and the parent. As noted in the research and qualitative assessment, the parent role is vital in motivating and structuring the students' daily tasks (Borup, West, et al., 2014; Curtis & Werth, 2015). However, as one administrator indicated, "I don't believe that the families understand exactly what it takes to function in a virtual environment. And I don't think they're as prepared as they might think they are" (Student Services Coordinator, interview, May 31, 2018). Providing prospective families with a more comprehensive view of what to expect from learning in an online environment as well as clearly outlining their role and responsibilities and the time commitment required may strengthen the family support that is available to students. Further, in a more recent survey of learning coaches conducted by the school, additional academic support is consistently one of the top requests from learning coaches. In the 2018-2019 academic year, approximately 30% of learning coaches responding to a school-administered survey requested academic support.

Teacher Professional Development

As indicated by the survey results, while many of the teachers in this school have experience teaching in traditional schools, many of them are new to teaching online. Moreover, there is significant school growth expected in the next few years, with an anticipated 17 new teachers hired for the start of the 2018-2019 school year. While the teachers receive significant and ongoing professional development, most of the teaching staff indicated that they would benefit from further professional development opportunities. Moreover, one of the teachers interviewed stated,

> It kind of seems like we were bombarded when we first started with a ton of professional development and it had very little meaning… This is our first experience in cyber school so we had literally zilch. We had no idea what we were coming into, so we had this immense amount of training but nothing to apply it to until two or three weeks later, and by then, I mean you're just kind of trying to muddle through… (Teacher, interview, May 22, 2018)

Restructuring the professional development opportunities that are provided to new teachers to integrate meaningfully professional development with practical application in the classrooms might provide additional support to teachers in this school. Moreover, teachers specifically indicated that some of the greatest challenges they face in teaching online include getting students to participate, be self-motivated, and complete work. It may be difficult to reach students who do not have any intention of engaging in the learning process. However, providing additional supports and options for teachers to support their students in becoming more accountable for their work might help increase student engagement as well. These additional supports and options could likely be accomplished through ongoing, sustainable, and context and content-based professional development opportunities that include both relying on experts in the field as well as incorporating and addressing the individual learning needs of the teaching faculty.

Interactions within the Online Classroom

As previously established through the theory of transactional distance (Moore, 1993) and the Community of Inquiry framework (Akyol & Garrison, 2008; Cleveland-Innes & Garrison, 2010; Shea & Bidjerano, 2009), the interactions within an online classroom are essential considerations for creating a community and facilitating learning. The responses to the open-

ended questions within the survey indicated that 55% of teachers perceive students as having a sense of community as well as ample opportunity for interactions. Another 22% hope students feel that way and provided examples of ways that students demonstrate their level of comfort within the classroom. However, the closed-ended questions from the survey indicated that the types of interactions are limited, with 62% of teachers reporting that they allow for regular exchanges of social interactions, but only 15% of courses designed to promote social interactions. Moreover, only 8% of teachers indicated that activities required students to develop products collaboratively by working cooperatively. One administrator supported the limiting of interactions, indicating monitoring social opportunities is important:

> you need to know who those kids are in the class before you open up that chat because there are a variety of students who come to us for a variety of reasons, and some of those students have been expelled from their previous school for various reasons, and you want to be-- you want to honor that they need a quality education, but you need to be careful what they might expose other kids to… (Academic Director, interview, May 15, 2018).

As previously noted, adolescent online students indicated that peer interactions helped to motivate them and further correlated with final grades and overall class satisfaction (Borup et al., 2013a). Professional development opportunities that provide teachers with ways to increase safe and well-monitored interactions within the classroom may allow for a more collaborative experience that could additionally support student engagement.

Program Structure

The structure of the program, including the policy and procedures in place, is another area where implementing a change could be beneficial for increasing the levels of student engagement. Specifically, refining the referral tracking system used would provide greater

insight into the effectiveness of the remediation procedures for addressing low levels of student engagement. However, focusing on the more substantial systematic challenges could prove difficult, as the sponsoring for-profit corporation that supports the school primarily establishes these structures. Further, the researcher is a member of the Board of Trustees and consequently removed from the daily operations of the school. This distance from day-to-day operations could further confound the challenge of implementing structural and systemic changes. While the program structure is a potential opportunity for intervening, it is not likely a viable option at this time.

Conclusion

Low student engagement in elementary and secondary online classrooms results from several factors, including lack of teacher preparation for teaching online, the interactions that support the establishment of a community, and the inconsistent support of the in-person learning coaches. This needs assessment outlined several considerations contributing to students' difficulty in actively engaging behaviorally and cognitively within their online classrooms. The school operates on a three-person model with the student, teacher, and family collaborating and contributing to overall student success. The needs assessment revealed prime intervention opportunities within the teacher and parent branches of support provided to the student, with teachers recognizing the need for additional professional learning opportunities and recognizing the need to increase learning coach involvement. However, research also suggests that parents often look to teachers for guidance when working with students (Baker, Wise, Kelley, & Skiba, 2016). Yet, teachers are often unsure of how to involve parents as they are not taught strategies or approaches to address involving parents (Shartrand, Weiss, Kreider, Lopez, & Elena, 1997). Providing teachers with the knowledge, skills, and abilities to support learning coaches in being

more involved and supportive of their online students provides a viable opportunity for intervening. Further investigation in the next chapter explores possible interventions to determine the appropriate next steps in this research.

Chapter 3: Exploring Interventions to Cultivate Student Engagement in Online Classrooms

This chapter explores potential interventions for cultivating student engagement in kindergarten through 12th grade online classrooms and relies upon the Adolescent Community of Engagement (ACE) theoretical framework to situate potential intervention opportunities (Borup, West, et al., 2014). The ACE framework outlines teacher engagement, parent engagement, and peer engagement as contributing factors in establishing student engagement. Several intervention opportunities surfaced: cultivating the level of parental involvement, professional development (PD) for teachers to support them in cultivating parent involvement and supporting teachers' establishment of online professional learning communities.

This chapter discusses teacher engagement and opportunities for PD, including the application of a second theoretical framework specific to PD opportunities. The discussion of PD additionally includes an examination of the characteristics of high-quality PD, several types of PD applicable to the online context including professional learning communities (PLCs), followed by an analysis of PD in the online context. Next, a discussion of parent engagement occurs, including defining the role of a parent or learning coach, as well as measuring and increasing parental involvement. The final section evaluates teacher professional development to support increasing parental involvement in school. This chapter concludes with a proposal for addressing cultivating student engagement in K-12 online classrooms.

Results from the Needs Assessment

The empirical assessment discussed in the previous chapter focused on the factors of the teacher's preparedness for online teaching (Archambault et al., 2016; Kennedy & Archambault, 2012; Kennedy et al., 2013; Rice, 2009), student interactions (Borup et al., 2013a; Moore, 1989; Roblyer & Wiencke, 2004; Thurmond & Wambach, 2004), and teacher perceptions of student

engagement (Angelino et al., 2007; Fredricks et al., 2011; Fredricks et al., 2004; Kim et al., 2015; Richardson & Newby, 2006). In assessing the teachers' perceptions of student engagement, teachers reported on 16 criteria that include items such as *staying up on the readings, finding ways to make the course interesting*, and *put forth effort* (Dixson, 2010; 2015). The most consistently reported response resulted in the teachers reporting "not really characteristic of most of my students" (Dixson, 2010, 2015). The pre-existing de-identified data further revealed that engaging students was a significant problem, with approximately 26% (or about 325 students) referred for administrative support for demonstrating low levels of engagement.

The online school operates on a three-legged model, with the parent, teacher, and the student each playing essential roles in student success. In the qualitative analysis, teachers and administrators recognized family support as key to a student's success in an online classroom, with parents typically taking on the role of an in-person learning coach. Parents serving in the role of learning coach or supporter often provide the student with the structure and encouragement needed to succeed (Borup, West, et al., 2014; Curtis & Werth, 2015). Specifically identified as part of the parental role for online students are the responsibilities of the organizer, instructor, motivator, and manager (Hasler-Waters et al., 2018). However, particularly as students get into middle and upper school and gain increasing levels of independence, many students are expected to engage in their studies on their own. This increase in autonomy often results in inadequate support for older students.

In the needs assessment, both teachers and administrators indicated in interviews that parents were frequently not involved and that students lacked the support and structure from home upon which the school relies. Without in-person parental supports in place, students are

often not accountable for their work, and many students struggle with completing assignments and courses. However, the most striking result of the needs assessment was that some students enroll in online schools with limited intentions of engaging in the work. Students, who may struggle with other life issues such as being young parents or needing to help support their families financially, enroll in online school to secure social benefits for their family (Academic Director, interview, May 15, 2018). Unfortunately, overcoming this challenge to engaging this subpopulation of online students may not be possible within the context of any school-based intervention for this current investigation.

The needs assessment clearly outlined two opportunities for intervening: promoting parental engagement in the learning process and providing teachers with professional development opportunities. As a result of this school's reliance on the three-legged model for student success, parental involvement is an important factor to consider when investigating increasing student engagement. Moreover, the staff interviewed in the needs assessment confirmed extant research that suggests that many online educators assume their role without adequate training, education, or experience in the unique aspects of teaching online (Archambault et al., 2016; Kennedy & Archambault, 2012). Additionally, the needs assessment revealed that teachers were receiving PD in facilitation (100%), assessment and data use (93%), classroom management (93%), professional practice (93%), and technology (87%). Teachers reported feeling that the specific topics of increasing student interactions and participation, increasing student motivation, and increasing student accountability and work completion warrant further exploration and support. Additional research suggests that parents often look to teachers for guidance when working with students (Baker et al., 2016), yet teachers are often not taught how to involve parents with school (Shartrand et al., 1997). The next section discusses the

theoretical framework for this chapter, which provides a structure for discussing the parent and teacher opportunities for intervention.

Theoretical Framework: Adolescent Community of Engagement

A networked ecological systems theory lens was useful to identify an appropriate theoretical framework to guide the literature review of interventions. Frameworks that address engagement at the level of the micro, meso, and exosystems, which would incorporate the key factors regarding the student, parent, and teachers, were of interest. The Adolescent Community of Engagement (ACE) theoretical framework directed this intervention literature review (Borup, West, et al., 2014) as it guides fostering interactions that positively impact online students' learning. Although based upon the Community of Inquiry framework created for higher education environments (Akyol & Garrison, 2008; Cleveland-Innes & Garrison, 2010; Shea & Bidjerano, 2009), the ACE framework attends to the level of engagement present for adolescent online learners (Borup, West, et al., 2014). The ACE framework involves the three constructs of the teacher, parent, and peer engagement as directly influencing the fourth focal construct of student engagement.

In this framework, overall engagement considers affective, behavioral, and cognitive forms of engagement. Facilitating interaction, organizing and designing course materials, and instructing students are determining factors of the level of teacher engagement. The construct of parental engagement notably overlaps with teacher engagement, with parents influencing overall student engagement through facilitating interaction, organizing the learning environment, and instructing students as well. In this chapter, the use of parent or family includes learning coaches regardless of their biological relationship with the student. Given that parental engagement is not strictly limited to parents or guardians, the primary distinction between teacher and parental

forms of engagement is the proximity to the learner. Teachers are physically distant to the learner, while those fulfilling the parental role are in close physical proximity to the student. According to the ACE framework, this adult is referred to as the parent. However, it is common in cyber charter schools to refer to this person as the learning coach (Hasler-Waters & Leong, 2014). The third construct, peer engagement, involves instructing, collaborating, and motivating the student. The overall level of affective, behavioral, and cognitive student engagement resides at the intersection of these three forms of teacher, parental, and peer engagement. There is a direct relationship between the three supportive constructs and the level of student engagement, such that when there are higher levels of teacher, parent, and peer engagement, students will consequently become more engaged (Borup, West, et al., 2014). Figure 3.1 depicts the relationship between the ACE framework constructs.

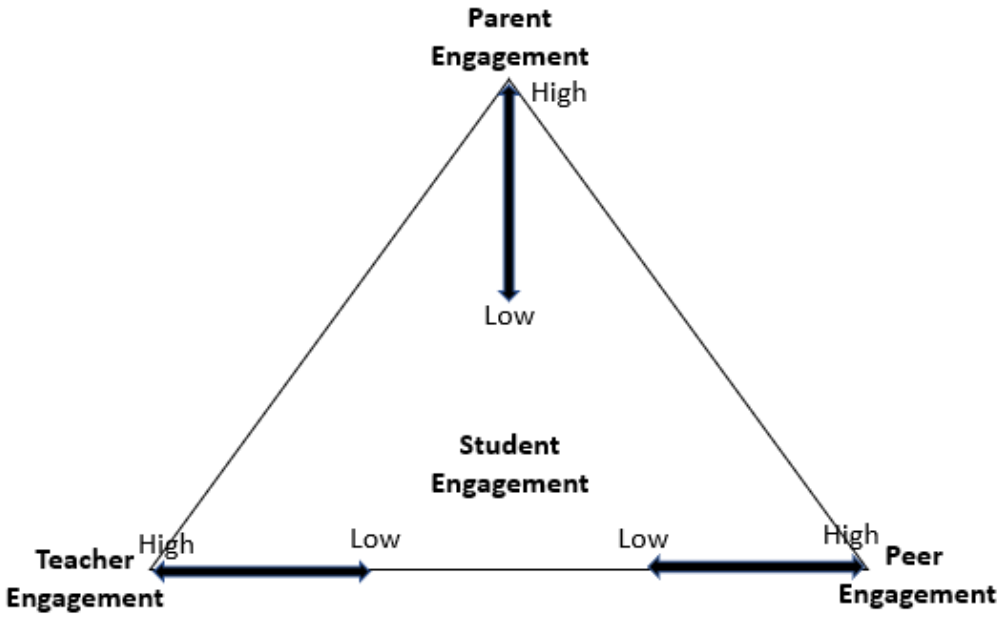

Figure 3.1. Adolescent Community of Engagement framework model (adapted depiction from Borup, West, et al., 2014, p. 112)

The various forms of engagement outlined in the ACE framework are relevant to researching intervention opportunities to support cultivating comprehensive student engagement in learning. Given that peers do not typically share the same responsibilities as teachers and parents, and that cultivating peer engagement can be impacted by teachers and parents, opportunities for intervention were limited to those that involve the parents and teachers. Further, consideration of increasing teacher engagement by providing specific and targeted professional development opportunities follows in the next section.

Teacher Engagement in Student Learning

According to the Community of Inquiry framework, upon which the ACE framework relies, the domains of design and organization, facilitation of discussions, and direct instruction are manifestations of teaching presence (Akyol & Garrison, 2008). Moreover, teaching presence is often a mitigating factor in establishing a classroom structure and environment that facilitates student involvement within the online classroom and can serve as a moderating factor of meaningful understanding of content and cognitive presence (Garrison & Cleveland-Innes, 2005; Shea & Bidjerano, 2009). In a study aimed at providing students with an opportunity to express what they believed to contribute to effective practices from online teachers, students reported that there were three primary aspects of teacher engagement that were most significant: the design and organization of the class, the instruction, and the facilitation (Borup & Stevens, 2017).

In a purposeful sampling of 11 teachers in an online high school, Borup, Graham, and Drysdale (2014) investigated teachers' perceptions of six defining criteria of teacher engagement: design and organization, facilitating discourse, instructing, nurturing, motivating, and monitoring. Key findings from this research revealed that even though the course curricula were

provided to the teachers, having the ability to modify curricula according to their classroom needs was important for teacher satisfaction. This finding aligns with results from the empirical needs assessment in which teachers indicated wanting more support in providing their students with supplemental materials and content. However, a limitation of this study was that the researchers suggested that motivating and monitoring students were difficult to distinguish as distinct criteria because efforts to motivate students frequently followed monitoring student progress. Also, teachers felt unprepared for teaching online and that the most significant challenge was regarding integrating technology and supporting students' use of technology (Borup, Graham, et al., 2014). Consequently, supporting teachers in becoming better prepared for the challenge of teaching in an online classroom is the intent in providing professional development to online teachers. This section begins by outlining a theoretical framework for building professional development. Then, continue by examining research regarding how authors define meaningful PD and approaches to PD, then conclude with a review of PD in an online context.

PrimeD Framework for Professional Development

The Professional Development: Research, Implementation and Evaluation (PrimeD) framework offers structure for potential professional development opportunities(Bush et al., 2020; Rakes, Bush, Mohr-Schroeder, Ronau, & Saderholm, 2017; Saderholm, Ronau, Rakes, Bush, & Mohr-Schroeder, 2017). The PrimeD framework involves four phases through which PD progresses through an iterative and cyclic nature: design and development, implementation, evaluation, and research. While keeping student outcomes as the focus, the design and development phase considers the context while establishing shared vision and goals for the PD. Phase I accounts for the needs of teachers in the school, creating a map for prioritizing and

meeting those needs. Phase II cycles through collaborative and classroom opportunities as teachers progress through the Plan-Do-Study-Act (PDSA) cycles of improvement science (Bryk, Gomez, Grunow, & LeMahie, 2015; Christie, Inkelas, & Lemire, 2017; Lewis, 2015; Perla, Provost, & Parry, 2013). Within the PrimeD framework, Phase II connects the professional development provided to teachers with the practical application within the classroom while maintaining a focus on the problem and a shared resolutions. PDSA cycles require teachers to reflect on their experiences and refine their classroom practices and is founded in strategies that create, trial, and continue to improve ways to address the given problem. Continuous improvement strategies are inherently grounded in the data collected regarding the changes in classroom practices, which informs the subsequent efforts to address the problem. Engaging in the iterative refinement of teaching practices not only supports implementation and the development of knowledge and skills within the classroom, but provides opportunities for teachers to learn from each other while raising the collective knowledge base within the institution. Phase III aims to evaluate the PD initiatives through both formative and summative assessments that align with the shared vision and goals established in the initial phase (Bush et al., 2020; Rakes et al., 2017; Saderholm et al., 2017). Evaluations commonly focus on the teachers' perception of the effectiveness of the PD, the extent to which knowledge, skills, or beliefs develop, the teachers' ability to transfer their new knowledge, skills, or beliefs to instruction or pedagogy, and the extent to which these instructional or pedagogical changes can impact student learning. In short, the evaluation of changes to address the problem focus on the extent to which the treatment worked within the classroom and the utility of the solutions. The evaluation of the intervention allows for addressing emergent concerns as well, and allows for flexibility in addressing the problem in context. The fourth and final phase of this framework

aims to generalize the evaluative findings from the previous phase and examining factors influencing the achievement of outcome goals by considering research focused criteria such as validity, reliability, and generalizability. The same data sources can be used to inform the evaluation and research criteria of the intervention however, some questions may focus on one criterion over the other. Further, the cyclical phase of the PrimeD framework is such that the exchange between the evaluation and research phases are important in considering the overall outcomes. The PrimeD framework guides the exploration of PD, as it impacts teacher engagement in student learning. The next section identifies the criteria for ensuring that PD is meaningful for teachers and effective at student outcomes.

Making Professional Development Meaningful

Professional development activities aim to support teachers in advancing and evolving their practice to support student learning outcomes (Guskey, 2002). Guskey (2002) suggests that the three primary professional development goals for teachers include implementing change within the classroom, shifting attitudes and beliefs, and promoting student learning. To be accessible, teachers need to view PD as relevant and offering information that is practically applicable to the classroom (Desimone & Garet, 2015; Guskey, 2002). High-quality PD relies on five essential elements: 1. A focus on content, which entails activities targeting specific subjects as well as how students learn those subjects. 2. Active learning by providing interactive opportunities for presenting, analyzing, and providing feedback instead of being a passive recipient of information. 3. Coherence such that PD objectives align with the objectives of the school, student, and community needs. 4. Sustained duration that involves a minimum of 20 hours of contact time. 5. Collective participation with teachers collaborating in meaningful

communities according to grade or content (Dawson & Dana, 2018; Desimone & Garet, 2015; Desimone & Stuckey, 2014).

A national evaluation of the Eisenhower Professional Development Program, a federally funded program that focuses on providing PD to improve teaching practices, collected data from 1027 teachers representing 358 school districts and State Agencies for Higher Education grantees (Garet, Porter, Desimone, Birman, & Yoon, 2001). This seminal quantitative investigation included analysis of the aforementioned five factors, suggesting that PD that is sustained over time and includes significant contact hours is an essential component. Specifically, sustained PD duration allows for further opportunities to promote factors such as active learning and coherence. Both active learning and coherence directly connect with enhancing a teachers' knowledge base and supporting the development of their practice. Moreover, the results from this seminal research indicate that focusing on content and implementing hands-on activities integrated in a meaningful way with school life would increase the effectiveness of the PD offered (Garet et al. 2001).

These findings can be expanded upon when incorporating teachers' needs in the development of PD to provide opportunities to make learning more relevant and subsequently promote professional growth. Lee (2004) conducted a mixed methods investigation comprised of several components, including a needs survey, interviews, and state standardized test scores. There was no information available about the participants in this study other than the research occurring in a higher education setting (no N reported). Teachers noted becoming more knowledgeable practitioners, being more reflective, and becoming more student-centered while aligning with state standards after having the chance to provide input regarding their PD needs (Lee, 2004). These findings suggest that including participants as decision makers in assessing

and determining their PD needs may be an effective approach to support professional development (Lee, 2004). Moreover, Lee's (2004) research supports the importance of connecting professional learning with professional context.

Higher education is a different context from elementary and secondary online environments. However, given the paucity of research in elementary and secondary online schools, higher education can serve as a proxy for understanding online professional development for teachers. To establish a framework for best practices for online professional development, Mohr and Shelton (2017) conducted a Delphi study with higher education faculty who teach online classes. The Delphi method fostered gaining consensus through four rounds of survey administration to identify PD topics that support online educators. The results revealed four categories of PD topics: faculty roles, online classrooms, the learning process, and legal issues (Mohr & Shelton, 2017). Faculty roles include understanding their role as online educators and establishing a presence; online classrooms include classroom structure and design, classroom management, and maintaining high standards. Further, the identification of three categories of best practice included a supportive campus climate, institution specific criteria, and staffing support. Despite the limitation that these categories may not be directly transferrable to the elementary and secondary context, it is important to note where the overlaps are relevant.

As previously mentioned, online teachers frequently accept their role without previous experience in online teaching (Archambault et al., 2016; Kennedy & Archambault, 2012; Rice & Dawley, 2009). Teachers need support in learning how their role changes when shifting to an online classroom, as well as how to structure their classroom and the learning experiences of their students. Consequently, the PD topics of faculty roles, online classroom design, and the learning process are significant in this research context as well. Moreover, the researchers of this

study suggest designing effective professional development for online educators depends upon the understanding and appreciation of their needs (Mohr & Shelton, 2017). This assertion aligns with Lee's (2004) indication that participants should be included as decision makers when designing professional development.

Understanding the PD needs of teachers is significant in designing effective PD, as is awareness of the effects of PD on teachers' instruction. A three-year longitudinal investigation utilized purposeful sampling of 30 schools across 10 districts and five states to evaluate the impact of PD on the instructional practices of teachers (Desimone, Porter, Garet, Yoon, & Birman, 2002). A total of 207 responses met the criteria for inclusion, and evaluation of data occurred according to three criteria: 1. Does PD focused on a specific practice increase the use of that practice? 2. Does focusing on several related practices increase the development of other models? 3. Is PD focused on specific practices strengthened by higher quality PD opportunities? The results from this investigation revealed that PD focused on a specific practice increases the use of that practice, and providing higher quality PD impacts the use of that practice (Desimone et al., 2002). There was no relationship found between focusing on several related practices increasing model development, and collective practices, and active learning opportunities had significant effects on the use of specific strategies (Desimone et al., 2002). Though not conducted within an online learning environment, this investigation suggests that providing high quality PD on a specific strategy or approach could support teachers in effectively developing the use of that strategy or approach in their practice (Desimone et al., 2002). The next section focuses on PD opportunities within an online context.

Providing Professional Development to Online Teachers

As described in the previous section, best practices in professional development for teachers in traditional brick and mortar schools includes the five features of content focus, active learning, coherence, sustained duration and collective participation (Dawson & Dana, 2018; Desimone & Garet, 2015; Garet et al., 2001). There is significantly less research available for K-12 online teachers, however, these five considerations continue to provide the basis for high quality PD for online teachers (Dawson & Dana, 2018). Moreover, the learning environment includes contextual factors that may change rapidly with the rate of technological advances (Rice & Dawley, 2009). As a result, including participants in the process of determining PD needs and supporting teachers in connecting and collaborating to build their expertise is essential in ensuring the effectiveness of the PD (Holmes, 2013; Lee, 2004). Additionally, while PD focused on specific practices does increase the use of the given practice (Desimone et al., 2002) in online and blended learning PD often tends to focus on vague topics as opposed to specific content (Dawson & Dana, 2018).

Scaffolding the professional development instruction to build on prior knowledge and experience can target needs specific to teaching online (Rice & Dawley, 2009). A mixed methods investigation used non-random, purposive sampling of 259 K-12 stakeholders from virtual public schools, programs, and organizations from across the United States (Rice & Dawley, 2009). This study revealed that most online educators were highly educated and experienced teachers, even if they were new to teaching online, which aligns with the findings from the needs assessment. Further, this study revealed that while there was a broad range of PD opportunities offered, more than 20% of administrators reported not following the established guidelines for PD, which may be important for improving PD opportunities moving forward.

This study also revealed that PD commonly appeared to be delivered by the school or program and tended most commonly to include topics such as foundational knowledge, technology tools, facilitation strategies, and lesson design (Rice & Dawley, 2009). In this study, nearly half of online teachers (46%) reported receiving PD online, 27% received hybrid instruction, and 27% received instruction face-to-face. Given that most online teachers are receiving PD either fully online or through hybrid learning opportunities, establishing an online learning community is an important option to consider (Rice & Dawley, 2009). In a case study investigation of professional development in an online community, providing teachers with opportunities to connect and collaborate supported the implementation of new strategies (Holmes, 2013). The next sections outline the development of effective professional learning communities as a means of professional development for teachers.

Online professional learning communities (PLCs). Professional learning communities provide a means for teachers to collaborate, establish a sense of community, and develop their teaching practices. According to the summary finding from a research report by Bolam et al., (2005),

> An effective professional learning community (EPLC) fully exhibits eight key characteristics: shared values and vision; collective responsibility for pupils' learning; collaboration focused on learning; individual and collective professional learning; reflective professional enquiry; openness, networks and partnerships; inclusive membership; mutual trust, respect and support. (p. i)

As technology has continued to advance, the opportunities have grown for teachers to participate in online professional learning communities. Online collaboration can foster communities that can increase content knowledge and modify instructional practices (Blitz, 2013). The design and

implementation of online communities of practice include structuring collaborations, facilitating self-reflection, promoting diversity, pairing expert and novice learners, and, much like Mohr and Shelton (2017) and Lee (2004) suggest, allowing teachers to participate in establishing the objectives for the PD in which they participate (Blitz, 2013).

Online PLCs are considered a viable and flexible professional development opportunity by teachers (Duncan-Howell, 2010). A mixed methods study, surveying teachers who were participating in online communities as a form of ongoing professional development, included 25 open and closed survey questions pertaining to background information, professional development, online communities, and communication technologies implemented (Duncan-Howell, 2010). Ninety-eight teachers participated in this investigation from three distinct online communities, each with varied backgrounds, experience, and geographic locales. This investigation aimed to evaluate the effectiveness of utilizing online communities, and the results revealed that 86.73% of respondents indicated that their participation reflected meaningful professional development. Moreover, 77% of teachers reported changes to their teaching practices resulting from the online communities. Time and timing were considered a significant advantage to online learning. Teachers reported (37.76%) spending one to three hours per week in the online community, and 40.82% indicated that shorter-term professional development consisting of 2-3 months would be most effective in implementing changes to teaching practices (Duncan-Howell, 2010).

The quality and depth of the content covered by online learning communities can vary, likely in relation to the goals established by the group involved. A study of 983 teachers across three online communities focused on a distinct sect of the teaching population analyzed the data collected from online discussion forums (Bae Kwon, Dirkin, & Bruno, 2018). The data collected

on the participants allowed for analysis of geographic locale, which revealed that connections were able to be made across great distances. However, the most frequently used words in the discussions were commonplace, such as “student,” “coach,” or “online,” suggesting that the depth and quality of the interactions could be improved. A possible limitation of this study and an opportunity for further research would be the inherent limitations of text mining. To be more specific, the data mining reduction process resulted in a list of frequently used words and connections between commonly used words. This process provides insight into the frequency of words used in discussion forums, yet there is limited context or implications for the use of the words. Although this study included a larger number of participants than the previously mentioned study, the method of analyzing data according to the frequency of word usage may prove to limit the understanding of the effectiveness of online PLCs. Incorporating qualitative interviews with participants would allow for greater understanding of the benefits the online professional learning communities have on teacher practice. Additionally, the researchers suggest that providing more structure and facilitation of the group discussions could increase the effectiveness of the practice, promoting connections and sharing of specific strategies to implement (Bae Kwon et al., 2018). Though there is little extant research in parental engagement in K-12 online classrooms (Borup, et al., 2013b; Borup, West, et al., 2014; Hasler-Waters et al., 2018), the next section begins to examine parental involvement and engagement in traditional schools first, followed by relevant considerations within online settings.

Parental Engagement

The Adolescent Community of Engagement framework outlines parental engagement as the activities of the adult in close proximity to the child that influence student engagement in learning (Borup, West, et al., 2014). Some researchers have suggested a distinction between

parental involvement and parental engagement. Parental involvement refers to time spent actively in the school building involved in activities structured by the school and parental engagement providing a more inclusive perspective of parent activities with parents taking an active role in how they take part in school related activities (Baker et al. 2016; Fenton, Ocasio-Stoutenburg, & Harry, 2017). For this literature review, both terms refer to the activities of non-school employees who support student learning. Typically, this occurs through the facilitation of interactions, organizing the learning environment, and instructing students (Borup, West, et al., 2014).

According to Hoover-Dempsey and Sandler (1995), parental involvement can occur in relation to the school or at home. However, learning in an online environment shifts this distinction as learning is commonly occurring from home. Utilizing models of parental involvement from traditional brick and mortar settings establishes a vital foundation, as research on parent involvement and engagement in K-12 online programs is sparse (Hasler-Waters et al., 2018). Consequently, the next section outlines an additional parental involvement framework from traditional brick and mortar school settings, followed by clarification of the parent/ learning coach roles and responsibilities in an online classroom. The subsequent section explores barriers to parental involvement, including ways to increase involvement in a traditional school setting and discuss the creation of an instrument specifically designed to measure parental involvement in a virtual school setting.

Parental Involvement Framework

An additional framework contributes to understanding the complexities of increasing parental involvement with the school. Established for traditional brick and mortar schools, Epstein et al.'s (2019) framework outlines six types of involvement to foster collaboration and

partnership between families and schools: 1. parenting, supporting the establishing of the home environment; 2. communicating, facilitating exchanges through varied mediums; 3. volunteering, soliciting parent support; 4. learning at home, supporting families in helping students with homework or other assignments; 5. decision making, family involvement within the school community, often advocating for children by serving on committees; 6. collaborating with the community, strengthening school programs through integrating resources and services from the community. These six criteria may shift in an online learning environment. Nonetheless, the foundation of the varied types of involvement remains intact and provides a guide for considering how best to involve parents and families. Moreover, each form of involvement includes different practices, challenges, and results (Epstein et al., 2019).

Defining the Role and Responsibilities of the Parent or Learning Coach

As a result of the overlap in the responsibilities of teachers and parents of students in online classrooms, it is essential to define the role of the parent (Borup, West, et al., 2014). Parents acting as learning coaches support student learning through providing structure and establishing routines for their students (Borup, West, et al., 2014; Hasler-Waters & Leong, 2014), motivating and monitoring students (Borup, West, et al., 2014), and instructing students in the acquisition of new content (Borup, West, et al., 2014). The parent or learning coach supporting a student in learning online is distinct from the homeschooling model in that the school is providing content, curricula, learning materials (including the computer and internet access), as well as school-based supports and services. However, parents are often unaware of the time commitment or level of responsibility they have in their student's online learning process, and this can be confounded by uncertainty regarding their role (Hasler-Waters & Leong, 2014; Smith, Burdette, Cheatham, & Harvey, 2016). Further, parents may have misconceptions regarding

online learning and their role and responsibilities in supporting their student in achieving academic success (Borup, Chambers, & Stimson, 2017). This section aims to outline the role of parents in K-12 online classrooms to identify areas for interventions.

Cyber charter schools commonly rely upon an adult in proximity to the student for support for the majority of the day (Borup et al., 2013b; Hasler-Waters & Leong, 2014; Smith et al., 2016). As noted in the data collected from the needs assessment, administration in the context of this investigation indicated that two-thirds of the student's day involves independent coursework during which parents are essential support. An ethnographic study of the roles of teachers and parents in cyber charter schools included 14 participants comprised of teachers, parents, and administrators (Hasler-Waters & Leong, 2014). This case study investigation used semi-structured interviews, field observations, email correspondence, content analysis of online training programs, and in-home observations to evaluate the roles in which learning coaches and teachers engage to support cyber charter students. This study used constant comparative analysis to evaluate the data, including systematically coding, comparing, and re-coding of data. Once categories of practices emerged, further synthesis revealed relevant themes, and multiple forms of data provided triangulation of this process (Hasler-Waters & Leong, 2014).

In contrast to Baker et al. (2016), the findings from this ethnographic investigation in a virtual learning environment suggest that there are four roles identified among learning coaches and online classroom teachers (Hasler-Waters & Leong, 2014). Learning coaches assume the role of managers and guides, and teachers assume the roles of experts and facilitators (Hasler-Waters & Leong, 2014). The managerial tasks of the learning coaches included organizing (i.e., establishing a schedule for students), setting expectations, motivating, and monitoring progress. Learning coaches tended to solicit help from teachers for content that they were not familiar

with, or in understanding appropriate developmental milestones (i.e., 4th graders should know multiplication facts). However, challenges arose for the learning coaches with the amount of time and work required of them, some reporting this level of involvement as overwhelming. Moreover, some learning coaches indicated having difficulty separating the role of the parent and the role of the teacher with their child (Hasler-Waters & Leong, 2014). In areas in which the roles of teachers and parents overlapped, additional challenges arose as a result of a lack of clarity regarding who was responsible for student academic performance. The study suggests additional research in building effective collaboration strategies between teachers and learning coaches, as well as recognition that learning coaches need to be prepared to be active participants in their students' learning process (Hasler-Waters & Leong, 2014).

Understanding the type of parental interactions, and the value they add to the students' experience, offer insight into how to structure parental involvement in a constructive manner. In a quantitative investigation of two freshman English classes at Open High School in Utah, the administration of two rounds of surveys occurred in the fall and winter of 2010 (Borup et al., 2013b). There were a total of 82 usable survey responses that focused on three research questions regarding the quantity of course-related parental interactions, the motivational value of said interactions, and whether the quantity of interactions correlates with course outcomes. Results from this investigation revealed parents primarily interact with their students, with 90% of parent interactions occurring with their students and just less than ten percent of parent interactions occurring with the course instructor. Furthermore, 65% of parents indicated that they spend five minutes or less interacting with the instructor in a given week, and another 40% stating no interactions with the instructor throughout the semester. Additionally, students reported 40% more time on interactions with parents regarding courses than interactions with peers, and more

than 300% additional time interacting with parents than interacting with instructors. Most student interactions with both parents (82%) and instructors (85%) related to content and procedures for the class. Additionally, while parents may not always be aware of the motivational value, they offer their students, 97% of students viewing parental interaction as motivational (Borup et al., 2013b).

However, parental interactions regarding content correlated negatively with course outcomes, which contrasts with the positive correlations between course outcomes and student interactions with other learners, content, and instructors (Borup et al., 2013b). The researchers speculate that this negative relationship between parental interactions and course outcomes is likely a result of school policy. This policy supports and requires increasing levels of interactions with low performing students as the speculation is that high performing students have a higher internal locus of control. While not focused on parent engagement directly, 40% of parents in the previously mentioned study report no interactions with the instructor (Borup et al., 2013b). This finding is significant as the intention is for teachers and parents to be collaboratively working to support students, and in the previous study by Hasler-Waters, and Leong (2014), teachers were considered experts who worked to facilitate learning. Without the relationship between parents and teachers well-established, parents are unable to receive support regarding content and appropriate developmental milestones, resulting in a parent acting as a learning coach potentially limited in their ability to support their children in learning. This difficulty might be especially true if parents are coming from traditional brick and mortar education systems and are basing their support on their previous educational experiences. The next section examines the role of parents of students with special needs in the online context.

The role of parents of online students with special needs. Some parents with children with special education needs select online learning environments because they believe their child's needs are going unmet in a traditional brick and mortar school (Smith et al., 2016). The research context maintains approximately 23% of students receive special education services (Administrator, personal communication, May 13, 2020), and thus evaluating the role of parents of online students with special needs is significant to this investigation. As previously mentioned in the literature review in chapter one, there are no federal laws in place that specifically address providing special education in online learning environments (Rice & Dykman, 2018). Moreover, the lack of federal policy in this area makes it difficult to ensure adequately meeting the needs of students in special education in online learning environments (Carnahan & Fulton, 2013). Although online learning may offer additional options for students with disabilities, the parental role potentially can be impacted by the needs of these students as well (Smith et al., 2016). The lack of policy and the impact this has on the parental role is particularly poignant, as the education of most online students with special needs occurs in general education classrooms without extant research on differentiation or how their individual needs are met (Carnahan & Fulton, 2013).

The role of parents of students with special needs who learn online additionally exemplifies the changes required of parents or learning coaches. A qualitative investigation of parents of students with disabilities focused on the research questions regarding the role of parents in the instruction of students with disabilities, as well as the challenges, barriers, and benefits associated with learning in a fully online K-12 school environment (Smith et al., 2016). The sample included 19 participants, all of whom were parents to children with disabilities in grades one through seven. The disabilities included learning differences, autism spectrum

disorder, emotional/ behavioral disorders, and Down Syndrome. This age range was selected as parents were considered more likely to be involved in earlier years of education (Smith et al., 2016). However, according to data collected in the needs assessment, students as young as sixth grade are being left home alone to attend online school. As a result, the upper end of this age range may not be entirely reflective of a high level of parental involvement. Smith et al. (2016) thematically analyzed interview data independently before collaborating to arrive at a consensus on established codes. Subsequent coding occurred by one researcher on the team. The other researchers reviewed the coded transcripts to ensure reliability, and the analysis concluded with all researchers meeting to ensure a consensus of coding and themes within parental statements (Smith et al., 2016).

Data analysis revealed four themes: the role of both parent as teacher; increasing and enhancing communication between parents and teachers; the significant time commitment from parents; and barriers to fully online instruction for parents (Smith et al., 2016). Regarding the dual role required of parents, participants were not concerned about the shifting roles but rather noted that their role shifted when their child enrolled online. Participants also indicated that teachers were more accessible in online classrooms as opposed to traditional brick and mortar schools, with more interactions occurring through email, phone, and video conferencing. This seemingly contrasts with the findings of Borup et al. (2013b) that indicate 40% of parents reported no interactions with online teachers. Moreover, parents noted that overall communications with teachers were different from those in a traditional school, in such areas as frequency, level, and type of communication (Smith et al., 2016). Parents were surprised by the time required of them, particularly as much of this time was regarding what they perceived to be traditional teacher responsibilities. Parents likened the time commitment required of them to

part-time working hours and indicated that they could not hold a traditional job while supporting their child in online learning. This finding regarding the parents' time commitment aligns with the suggestion by Borup et al. (2017) that parents may have misconceptions that challenge their ability to participate in the learning process with their students.

These findings are in alignment with previously discussed research both in traditional schools and online environments, thereby reinforcing the support for the findings. Specifically, much of the research discussed has outlined a shifting role for the parent as a teacher (Borup et al., 2013b; Hasler-Waters & Leong, 2014; Liu et al., 2010), increasing communications (Baker et al., 2016), the significant time required of parents or learning coaches (Baker et al., 2016; Hasler-Waters & Leong, 2014), and that barriers for parent and family involvement exist (Baker et al., 2016). The researchers suggest that to address some of these concerns, professional development for teachers can include improving communications with parents, ways to keep parents informed, and empowered (Smith et al., 2016). Though this approach is a viable opportunity to intervene, parent workshops early in the school year may help support parents in understanding their changing role and diminish barriers to their engagement as wells. The next section outlines a framework for understanding parental involvement in school settings, expanding on the barriers keeping parents from becoming more involved, methods to increase involvement, and measures for parental involvement in online schools.

Barriers to Parental Involvement

Increasing parental involvement can be necessary for student success (Epstein et al., 2019; Hoover Dempsey & Sandler, 1995). However, there are often practical barriers that limit parental involvement (Baker et al., 2016; Hornby & Blackwell, 2018; Hornby & Lafaele, 2011). Understanding the barriers and limitations of involving parents, families, and learning coaches

help to support increased involvement. According to Hornby and Lafaele (2011), while there is extant research supporting the importance of parental involvement, there is a gap between research and practice. This seminal article identifyies four categories of factors that can create a barrier to parental involvement in education: parent and family factors, child factors, parent-teacher factors, and societal factors. Parent and family factors can include beliefs regarding involvement, perception of invitations to become involved, life context, class, gender, and ethnicity. Child factors refer to aspects such as age, learning difficulties or disabilities, gifts and talents, and behavioral problems. Parent-teacher factors related to goals and agendas, attitudes, and the language of communications, while societal factors reflect demographics, historical, political, and economic considerations. Within Smith et al.'s (2014) study of students with special needs studying online, some of the barriers discussed by parent participants were program requirements, lack of personalization with their children's learning, and at times a lack of flexibility in programming, which aligns with the factors outlined by Hornby and Lafaele (2011).

In a follow-up study, Hornby and Blackwell (2018) investigated whether the last few years since the publication of the previous article had resulted in any shifts in parental involvement. This study occurred in 11 primary schools in southwest England, reflecting a 38% participation rate among the schools approached. School reflected a range of sizes, socioeconomic status, Office of Standards in Education, Children's Services and Skills (OFSTED) ratings, and urban, rural, and suburban locales. Head teachers, or their delegates, were interviewed with six semi-structured questions, including activities used to encourage parental involvement, the extent to which policy or practice changed in recent years, and current barriers to parental engagement (Hornby & Blackwell, 2018). The qualitative assessment is

limited as a result of the small scale of this study. However, this study reinforces the categories of parent and family factors, parent-teacher factors, and societal factors found by Horby and Lafaele (2011). An additional category of practical barriers, such as time constraints, school hours, internet safety, and parental uncertainty with how to approach teachers, was identified (Hornby & Blackwell, 2018).

The results from Hornby and Blackwell's (2018) updated investigation suggest that there has been some progress in diminishing the gap between research and practice. Specifically, four of the 11 schools that participated in this research did not perceive any barriers to parental involvement, and resoundingly indicated that there were quality relationships with parents, and most parents were actively involved. However, active involvement of parents is not always the case, with active parents likely being more willing to participate in this research as parents often experience several obstacles or barriers to becoming involved. The next section explores opportunities for increasing parent and family involvement with the school to support student success.

Increasing and Measuring Parental Involvement

To further investigate actively increasing parental involvement and engaging parents, Baker et al. (2016) qualitatively investigate 50 parents and 76 staff members across six traditional brick and mortar schools. Of the schools included in the study, three were elementary level, two middle school level, and one high school. Focus groups occurred within six Midwestern schools, selection of which was a result of implementing a positive behavioral intervention and support system (PBIS) as well as their willingness and ability to incorporate culturally responsive practices in this support system. The intent of the investigation was more broadly focused on the implementation of this PBIS. However, the research also included a range

of subjects, which included examining the barriers to family involvement and exploring opportunities for increasing family involvement.

The selection of participants for this study was by the principals from each of the six schools included. With regards to parent participants, principals were able to include families with varying socioeconomic statuses, races/ ethnicities, students with IEPs, and grade levels in focus groups of 10-12 participants. There were efforts included to ensure a diverse sample that accurately reflected the staff of the schools, with consideration to race/ ethnicity, grade level, subject area, length of teaching career, age, and role. However, the researchers recognized that the constraints of the staff schedules and availability moderated principals' adherence to established criteria. Consequently, it is undetermined whether the results accurately reflect the research contexts (Baker et al., 2016).

The staff in this investigation identified several additional themes that could prove prohibitive for parental involvement or engagement, including the need to overcome prior negative school experiences, apathy, or being uneducated (Baker et al., 2016), which contrasts with Hornby and Lafaele's (2011) and Hornby and Blackwell's (2018) work. Further, the themes relevant for both families and teaching staff include: providing opportunities for increasing family involvement and diminishing barriers; improving overall communication, including quality, clarity, and timeliness as well as language barriers; welcoming families in the building, including opportunities to observe class time; making time, which addressed both conflicts with other events and work schedules for parents; and shifting from involvement to engagement which included activities beyond the classroom or school building (Baker, et al., 2016).

In this study, the researchers considered involvement to reflect actual time spent in the school building, with engagement reflecting a broader level of how parents can be involved

(Baker et al., 2016). Though this distinction is less directly applicable to online learning environments, the research provides insight into how to involve parents, and the findings can be applied within the online context as well. Specifically, teachers and schools providing parents who are acting as learning coaches with opportunities to learn strategies to support students, increasing communication, creating a welcoming environment for parents and learning coaches, and providing a range of ways for families to become involved are all applicable opportunities within the online environment (Baker et al., 2016). The researchers conclude by suggesting that parents are seeking guidance from their schools regarding how to help their children and that more supports would help increase parental involvement and engagement in their student's learning process. Although this study is qualitative and inherently has limited generalizability, the recommendations from the researchers likely remain relevant and applicable for increasing parental involvement in online classrooms as well.

There is little extant research in parental involvement in K-12 online environments (Borup, et al., 2013b; Borup, West, et al., 2014; Hasler-Waters et al., 2018). As previously mentioned in chapter one, Black (2009) focused his dissertation research on revising an instrument for measuring parental engagement used in traditional schools by Hoover-Dempsey et al. (2005) to be applicable within an online environment. This revised instrument was later validated and administered to 938 parents of students in virtual schools and analyzed using confirmatory factor analysis (Liu et al., 2010). The validation of this instrument confirmed the four criteria of parental encouragement, parental modeling, parental reinforcement, and parental instruction. The chi-square assessed significant goodness of fit, and Cronbach's alpha ranged between 0.88 and 0.93 for the four variables, suggesting high reliability of the subscales comprising the instrument (Liu et al., 2010). Establishing a valid and reliable instrument to

assess parental involvement is a foundational step in promoting parental involvement, yet research has been scarce in this field since the initial validation of the instrument. The next section outlines professional development opportunities for online teachers to support them in increasing involvement in the school and within the classroom.

Preparing Online Teachers to Involve Parents (Learning Coaches)

Though intervening with parents may be a worthwhile enterprise, intervening with teachers may have the opportunity to affect parent engagement as well. In a study by Blau and Hameirei (2012), the researchers mined the interaction data of 828 homeroom and content specific teachers of secondary students in seven schools in Israel. Results revealed that parents logged in three times as frequently with more teachers who log into their online system and send messages more regularly (Blau & Hameirei, 2012). These findings suggest that supporting teachers in more actively engaging through the online management system can have an impact on parental practices as well. However, while increasing family involvement is a valuable enterprise, teachers are often not prepared for the responsibility of doing so within their classroom (Hoover-Dempsey, Walker, Jones, & Reed, 2002; Shartrand et al., 1997), and may not have the skills or knowledge to initiate or continue efforts to involve parents or families (Hoover-Dempsey et al., 2002)

A report from the Harvard Family Research Project, in conjunction with the US Department of Education, aimed to describe findings on preservice teacher education programs that included parental involvement (Shartrand et al., 1997). In 1992, the researchers surveyed 60 programs delivering teacher education in 22 states that had a family involvement component as part of their teacher certification requirements. At the time of the survey, fewer than 50% of the teacher education programs offered an entire course in family involvement, and the most

commonly addressed focal areas in coursework included developing an understanding of effective parent-teacher conferences and using parents as teachers. Although conducted while online schools were just beginning to open, the survey results align with the discussion in chapter one that preservice education programs do not adequately prepare many online educators for the challenges in online teaching (Archambault et al., 2016; Kennedy & Archambault, 2012).

However, approximately two-thirds of the teacher education programs surveyed planned to increase training in parental involvement (Shartrand et al., 1997). The extent to which pre-service teachers are trained sufficiently in parental involvement is still unknown, and this report further identifies various methods of training for involving parents and families:

> … four major approaches illustrate the kinds of attitudes, knowledge, and skills that teachers can acquire to increase their effectiveness with families. The approaches include: (1) a functional approach that describes the roles and responsibilities of teachers and parents in promoting student achievement; (2) a parent empowerment approach based on the strengths of disenfranchised families; (3) a cultural competence approach that makes the school an inclusive, respectful setting where diversity is welcomed; and (4) a social capital approach that builds community support for education. (Shartrand et al., 1997, p20)

Each of the approaches outlined above offers value to a potential intervention. However, given that many families select online learning for their children because they are unsatisfied with other learning experiences, a parent empowerment approach based on the strengths of the learning coaches in combination with building community support may be most effective. Moreover, family involvement initiatives are notably more effective when based upon the

assumption that parents have valuable contributions to offer and that the parents aim to ensure optimal outcomes for their child (Shartrand et al., 1997).

In response to the minimal extent to which preservice education programs offer content on involving parents and families, the development of an in-service teacher education program to support teachers in involving parents occurred (Hoover-Dempsey et al., 2002). The creation and implementation of this program, Teachers Involving Parents (TIP), aimed to facilitate teachers' solicitation of parent involvement, thereby increasing parent participation by developing practices that can be employed reasonably in various domains and content areas.

The six modules in this program include beginning with creating a foundation for the program by presenting research on the effects of parental involvement. This initial step involves activities including discussion of what parental involvement entails, identifying barriers to parental involvement, and reflecting and sharing examples and non-examples of effective parental involvement. The second module emphasizes decreasing barriers to parental involvement, including focusing on addressing problems that arise with parents. Activities centered on small groups discussions of how to solve some of the key barriers, which were then shared within the larger groups. Addressing the parent perspective followed as the third section, with activities including sharing information about parents by having parents participate in a displayed interview in which they provided detailed information about their efforts to support their child in school. Teacher participants were then asked to note descriptors that they observe, followed by reading an interview with the parent. As the teachers recognized the importance of having more information about parents available, the discussion shifted to how to approach parents differently to get complete information about the student's activities and efforts. The program continued in the fourth module by discussing how to enhance communication with

parents, including breaking small group discussions regarding success, challenges, and methods for improving communications with parents. Addressing hard-to-reach parents followed in the fifth module, with the provision of additional resources to teachers. The final sixth aspect of this program involved planning and applying strategies for involving parents, including sample challenges with parents that groups worked together to address (Hoover-Dempsey et al., 2002). The development of these modules aligns with Epstein et al.'s (2019) framework, in which facilitating communication and collaborating with the community are key elements.

Assessment of the effectiveness of this program occurred with two groups of teachers and staff in two different schools (Hoover-Dempsey et al., 2002). Presentation of the program to teaching staff was part of a social service program to support the outcome of high-risk students. The first context was an elementary school in which 13 teachers and support staff participated in the program, and ten teachers and support staff continued without participating in the program and thereby served as a comparison group. In this school, the participants decided to have all six modules delivered at school over eight weeks. The other school involved was a middle school in which 17 teachers and support staff participated, with 12 teachers and support staff serving as a control group. At this school, the participants decided to proceed through the six modules in an accelerated two-week timeline. Results from the study reveal increases in teacher efficacy and teacher perception of parental efficacy but did not positively impact teachers' beliefs regarding parent involvement, the use of specific practices to enhance involvement, or teacher reports of parent involvement (Hoover-Dempsey et al., 2002). However, the researchers note that the abbreviated duration of the program likely made it difficult to assess changes in beliefs, practices, and parent involvement and that a longer-term assessment of the intervention would provide more robust feedback. Although the creation of these modules and delivery of this

program was within a traditional brick and mortar setting, transferring these modules to an online context would offer valuable insight, strategies, and support for teachers in involving parents and learning coaches.

Conclusion and Overview of Intervention

Several frameworks have guided this investigation, and it is important to understand the relationship between these (see Figure 3.2). Initially Ecological Systems Theory (Bronfenbrenner, 1994) was utilized to understand the problem of low student engagement in K-12 online classrooms broadly from every level of the system. Within the microsystem, the Community of Inquiry theoretical framework (Akyol & Garrison, 2008) was applied to understand the interactions in direct proximity to the learner. As this dissertation progressed to consider opportunities for intervention in this chapter, the Adolescent Community of Engagement framework (Borup, West, et al., 2014) outlined two potential populations with which to intervene- the teacher and the learning coach populations. However, research suggested that it might be possible to intervene with teachers to support them in increasing learning coach involvement, thereby addressing both populations simultaneously. As a result, the PrimeD framework (Bush et al., 2020; Rakes et al., 2017; Saderholm et al., 2017) supported the structure of the professional learning provided to teachers. The Family, School, Community Partnerships framework (Epstein et al., 2019) provided the content of the information that would be provided to teachers during the PD sessions. As such, progressing through the chapters of the dissertation, and consequently the frameworks applied in each chapter, has created a funnel effect that systematically narrowed towards the intervention.

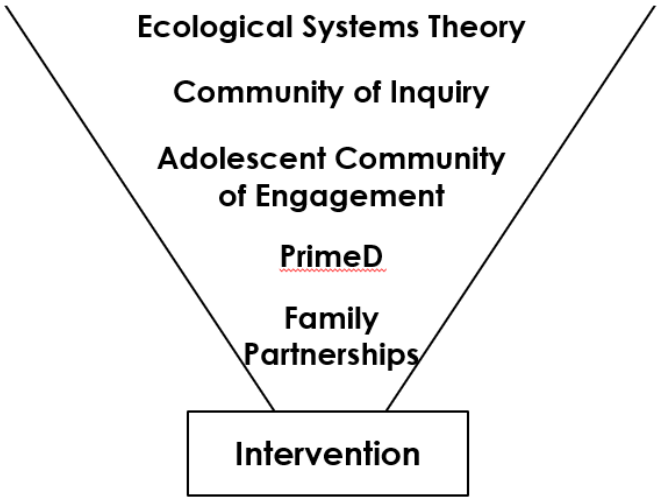

Figure 3.2 The funnel of frameworks leading towards the intervention.

When considering opportunities for intervention, it is important to consider that there is a significant overlap in the roles and responsibilities of teachers and parents (learning coaches) who work with students in K-12 online learning environments (Borup, West, et al., 2014; Hasler-Waters & Leong, 2014; Smith et al., 2016). Parents often rely upon teachers for the expertise in content knowledge, yet teachers frequently do not have experience in online teaching before assuming their roles as online educators (Archambault et al., 2016; Kennedy & Archambault, 2012). Parents have noted a shift in their roles when their students enroll in online programs (Smith et al., 2016), and tend not to realize the full-time job equivalent time commitment before enrolling their child online (Hasler-Waters & Leong, 2014; Smith et al., 2016). Moreover, parents often look to teachers for guidance when working with students (Baker et al., 2016), yet teachers are often not taught how to involve parents with school (Shartrand et al., 1997).

The data collected in the needs assessment align with the data discussed in this literature review. According to the survey administered to teachers, though all teachers surveyed had previous teaching experience, 73% were new to online teaching. Teachers reported wanting more professional development in engaging parents, increasing interactions among students, and providing students with additional supplemental content not included in the curriculum to

support student learning. Moreover, all teachers recognized that students' assignment completion was a challenge and getting students to take more responsibility for their work was necessary. More than 87% of teachers reported that engaging the learning coaches was a challenge either to some extent or to a great extent. Additional support occurred in interviews with teachers and school administrators, all of whom suggest that parents were unaware of what the requirements were for them as learning coaches before enrolling their students. According to one administrator, "I would say I don't believe that the families understand exactly what it takes to function in a virtual environment. And I don't think they're as prepared as they might think they are." (Student Services Coordinator, interview, May 31, 2018). While a teacher suggested, "And I think a lot of them just kind of rush into the whole cyber school thing because they need something else without really taking into consideration the amount of work that ends up falling on the parent too." (Teacher, interview, May 22, 2018).

Consequently, the intervention included a series of professional development opportunities incorporated into the pre-existing professional development schedule at the school. In alignment with the findings of Lee (2004) and Blitz (2003) that suggest including participants as decision makers, the PD aimed to address the results from the needs assessment data by providing strategies to support teachers in facilitating parental engagement. The intervention began with in-person PD that occurred at the start of the school year, and continue via ongoing online PLCs, in alignment with the delivery of the majority of the existing professional development in this school. Figure 3.3 depicts a revised conceptual framework that outlines the intervention.

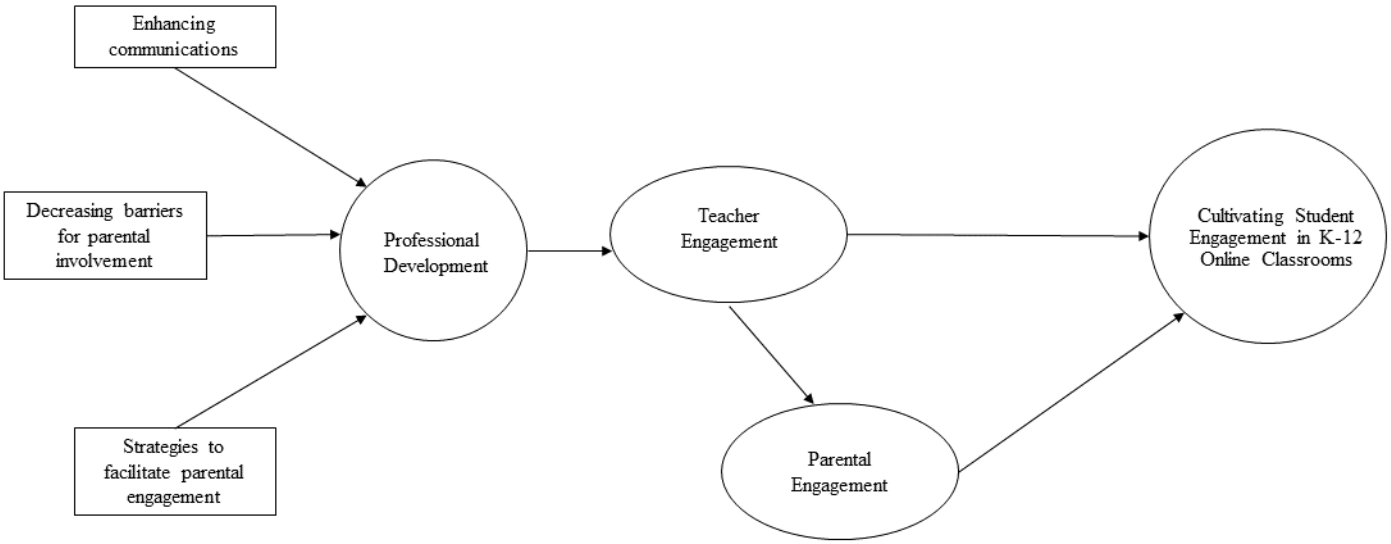

Figure 3.3. Revised conceptual framework outlining the intervention.

The professional development sessions included a combination of structured and unstructured learning opportunities, as well as opportunities for practical application and collaboration. Careful and thoughtful design of the PD provided is essential to ensure the effectiveness of the learning opportunities for teachers. Utilization of the modules created by the Teachers Involving Parents (Hoover-Dempsey et al., 2002) program served as the foundational structure. This structure allowed for teachers to build on prior knowledge from traditional brick and mortar schools (Rice & Dawley, 2009), with modules modified to be appropriate for the context of an online classroom. In alignment with the ACE framework, providing teachers with PD to support their engagement, along with parent and peer engagement, cultivated affective, behavioral, and cognitive engagement for students in online classrooms.

Chapter 4: Intervention Procedure and Program Evaluation Methodology

According to the ACE framework, the level of student engagement in online learning resides at the intersection of parental, teacher, and peer engagement (Borup, West, et al., 2014). The problem of low student engagement in K-12 online classrooms within the research context links directly to the level of parental/ learning coach engagement. Learning coaches are the non-school employees who work in person with students enrolled in the online school in their offsite location. While parents typically serve as the learning coach for their students, other family members or adults can serve in this capacity as well. For this investigation, the term learning coach was used to refer to parents and other individuals working with the student from home. The needs assessment revealed that that learning coaches frequently were less engaged with students than assumed by the school, and students as young as fifth grade are routinely unsupervised (Teacher, interview, May 22, 2018). By sixth grade, students were often left home alone to attend school (Academic Director, interview, May 15, 2018). As a result, students lacked the in-home support and structure anticipated by the school when relying on the three-legged model to be successful. Needs assessment survey responses revealed that most of the teachers find engaging learning coaches a challenge either "to some extent" or "to a great extent" and that most teachers want more PD on effective strategies to engage learning coaches. Consequently, the intervention focused on PD opportunities to support teachers in developing their practices when involving learning coaches.

The theory of treatment aims to explain how the intervention accomplished the goal of developing teacher practices and fostering collaboration between teachers and learning coaches. Developing the theory of treatment required identification of the target group and treatable aspects of the problem, specified the inputs, the relevant steps in the process, and the expected

outputs (Leviton & Lipsey, 2007). Figure 4.1 below outlines the relevant variables and the relationships between the variables that contribute to increasing learning coach involvement and by proxy increasing student engagement in online classrooms (Leviton & Lipsey, 2007).

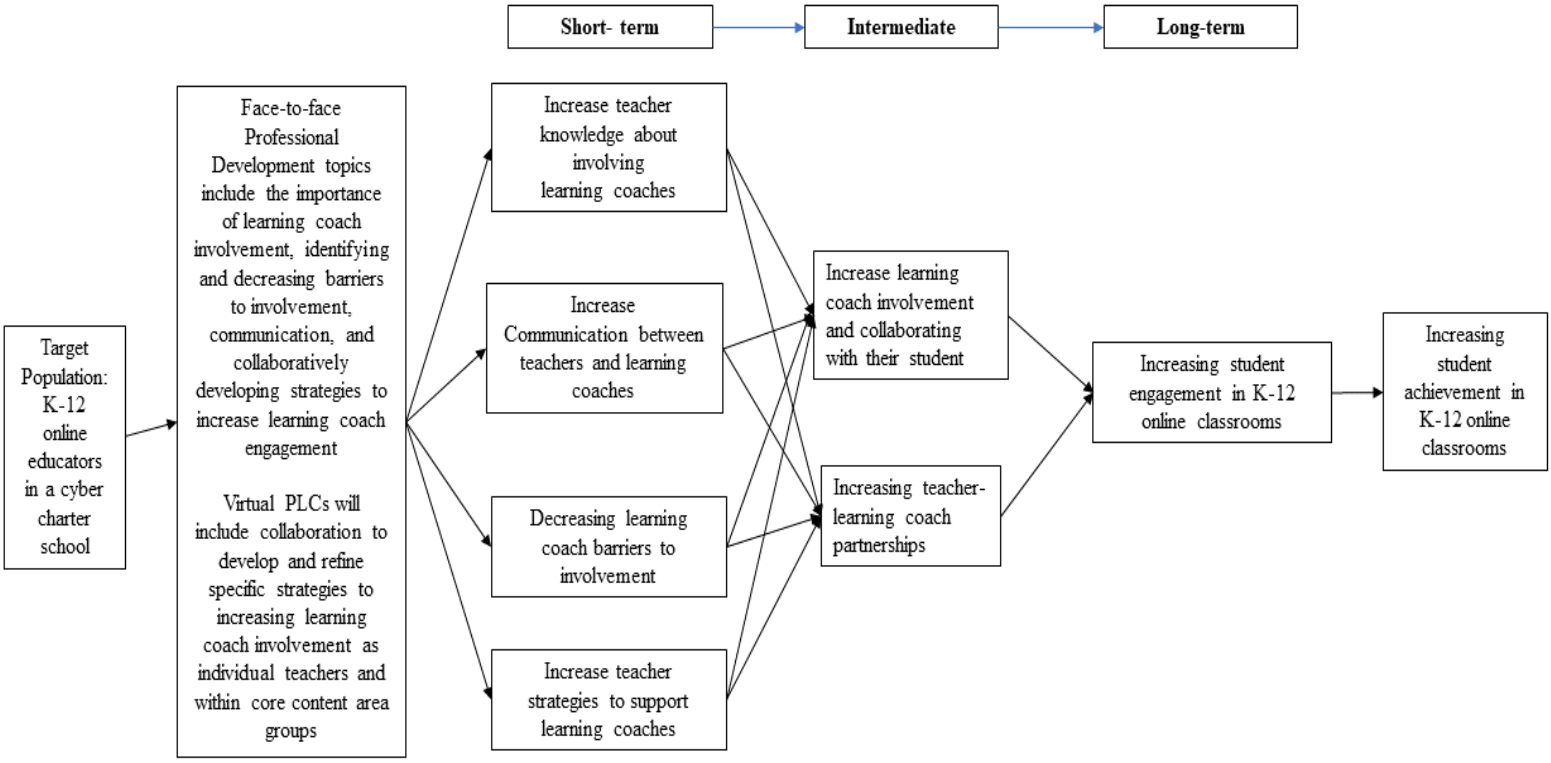

Figure 4.1. Theory of Treatment model of the intervention.

The aim of the study was to provide teachers with the perspective, knowledge, and skills to augment their practices of involving learning coaches. Increasing communications between teachers and learning coaches, decreasing barriers to learning coach involvement, and increasing engagement, particularly with difficult to reach learning coaches, were essential components to include in the PD provided to teachers (Baker et al., 2016; Hoover-Dempsey, et al., 2002). The desired proximal outcomes focused on increasing teacher knowledge of strategies that increase learning coach involvement. Distal outcomes aimed to increase learning coach involvement and engagement, which in turn should ultimately have a positive influence on student engagement

and achievement. Although there was an expected immediate result on teacher knowledge, changes in learning coach involvement and student engagement were beyond the scope of this study.

The intervention began with a series of face-to-face PD sessions that included a discussion of the rationale for learning coach involvement, and the importance of decreasing barriers to involvement and increasing communications. Additionally, including a review of and practice with strategies for inviting learning coaches to engage occurred. Following the initial face-to-face PD, a series of virtual professional learning community (PLC) sessions for the teachers allowed teachers to work on developing their approaches to increase learning coach involvement as well as provided opportunities for teachers to reflect, share, and refine their classroom strategies.

Research Questions

Mixed methods investigations clarify the purpose and development of research questions, which in turn determine the methods used (Onwuegbuzie & Leech, 2006). Formulation of research questions included both process questions to ensure that the delivery of the intervention aligned with the intentions of the researcher (Saunders, Evans, & Joshi, 2005; Zhang et al., 2011), and outcome questions to assess the effectiveness of the program (Rossi, Lipsey, & Freeman, 2004). The process research questions focused on adherence to the intended implementation plan and the teachers' experiences and response to the PD. Outcome research questions focused on the effectiveness of the intervention in changing practices for the teachers (see Appendix D for summary matrix). The mixed methods research questions were as follows:
Process questions:

RQ1: To what extent was the PD to increase learning coach involvement implemented as intended?

RQ2: What are teachers' experiences with the PD to increase learning coach involvement?

Outcome questions:

RQ3: In what ways have teachers augmented their practices to increase learning coach involvement after participating n PD to increase learning coach involvement?

RQ4: How do the interactions between teachers and learning coaches change after teachers' participation in the PD to increase learning coach involvement?

Research Design

Mixed methods research design answers research questions that may be difficult for a single methodological approach to address (Teddlie & Tashakkori, 2003) and can enhance the breadth and depth of research findings (Johnson & Onwuegbuzie, 2004). In this investigation, mixed methods research provided insight into the broad patterns represented in the quantitative data and depth in understanding the individual experiences of teachers and learning coaches gathered qualitatively. Utilizing both forms of data collection allowed for the investigation to draw from the strengths of both methods and minimize potential weaknesses or limitations of either individual method (Johnson & Onwuegbuzie, 2004). Much like qualitative research, mixed methods investigations can be iterative and inductive (Dougherty, 2017). Mixed methods research can offer a more robust and comprehensive understanding of the data and improve the researcher's ability to answer research questions (Teddlie & Tashakkori, 2003). This investigation utilized a convergent parallel mixed methods design. Quantitative and qualitative data collection occurred concurrently with integration occurring during data analysis and interpretation (Creswell & Plano Clark, 2011, 2018). The convergent parallel design involved independent data

analysis according to each method, as well as quantitizing the qualitative data (Teddlie & Tashakkori, 2003), followed by a comparison of data and integrated analysis (Creswell & Plano Clark, 2011).

Logic Model

Creating a logic model established a framework for the design of the study, providing a precise model of the inputs, activities, outputs, and participants involved in the intervention (McLaughlin & Jordan, 1999). Figure 4.2 below depicts the logic model for this intervention. The key inputs for this intervention included administrative support and approval, the time devoted within the existing PD schedule, active engagement of teacher participants, physical and virtual meeting spaces, materials for delivery of the PD, and the researcher's planning, preparation, and delivery of the PD. The participants who received the PD included the full teaching staff of the online school, which was 102 teachers K-12th grade teachers at the start of the school year. The teaching staff grew to 125 K-12th grade teachers by the conclusion of the intervention. All teachers were invited to participate in data collection as well. Surveying of learning coaches with open-ended questions also occurred. There were 1,861 students enrolled in the school at the conclusion of the intervention, with 408 unique learning coach responses.

Context: This K-12th grade cyber charter school opened in 2017 with the help of a large sponsoring for-profit organization. The school relies upon a three-legged model that includes the student, teacher, and the parent or learning coach for student success. Although most learning coaches are parents, both terms are used to refer to a non-school employee who supports student learning while in close physical proximity to the student.

Inputs	**Outputs**		**Outcomes -- Impact**		
	Activities	*Participation*	*Short*	*Medium*	*Long*
-Teacher participants - PD administrator support - Executive Director and CEO support and approval - physical and virtual meeting spaces - time in existing PD schedule - materials for PD- technology to present material, handouts, etc. - researcher to plan, prepare and deliver PD	-in person PD during in-service week in August for new employees (4 hour session) covering topics previously covered for returning teachers in-person PD during in-service week in August for all employees (4 hour session); -1-hour virtual session with all teachers, followed by division specific in-person PD in November (3 hours total) -virtual, collaborative PLC sessions ongoing December- March occurring twice per month for one hour; two sessions with all staff, two sessions for elementary, middle, and high school teachers each	-full teaching staff for PD, (102-125 teachers) Expected minimum of 45 responses to survey, with 6-8 participants for focus group or interviews - 1861 learning coaches surveyed post-intervention; 408 unique responses	-augment teacher practices regarding how to involve learning coaches -increase teacher engagement -building teacher collaboration -increase in strategies available to teachers for involving learning coaches -increase communication between teachers and learning coaches -decrease barriers to learning coach involvement -increase teachers understanding of learning coach perspective	-increase of teachers' practices in involving learning coaches -increasing learning coach involvement -increasing teacher-learning coach partnerships	-increase student engagement in online classrooms -increase academic achievement of K-12 online students

Assumptions	External Factors
- support from school administration and for-profit sponsoring administration - modified instrument for measuring teachers involving parents is appropriate for online use - PD has sufficient time - teachers are motivated and interested to involve parents/ learning coaches - teacher PD has an impact on parent/ learning coach involvement - Potentially targeting learning coaches and students who are already somewhat involved	- lack of participation from teachers and/or parents - teachers provided with PD modules in involving learning coaches this spring

Figure 4.2. Logic Model of inputs, outputs, and outcomes of the intervention.

The short-term goal of this intervention was to support teachers in augmenting their practices of involving learning coaches by offering strategies for engaging learning coaches. The short-term goals informed the medium-range goals of increasing learning coach involvement and increasing collaboration between teachers and learning coaches. The culmination of short and medium range goals ideally result in the long-term goal of increasing online student engagement, eventually influencing student achievement, which are beyond the scope of this study.

Process Evaluation

The process evaluation plan provided insight into the extent to which implementation of the PD was as intended and the teachers' experiences and response to the professional development. The face-to-face PD starting the school year began with a series of workshops, the last of which was in early November. The first 4-hour session was for new staff to cover the content provided to the returning teachers the previous year. The second 4-hour session was for all staff. Prior to the third face-to-face session, there was a one hour virtual PD for all staff to introduce the structure and intent of the final 3-hour in-person PD in November. The intervention continued with a series of eight 1-hour PLC sessions, with two sessions delivered to all staff, and two to each division of elementary, middle, and high school teachers. The process evaluation occurred ongoing throughout the intervention through the collection of researcher notes as well as a mid-intervention survey and focus group with teachers.

Project implementation. Project implementation evaluates the extent to which the intervention followed to the established plan (Zhang et al., 2011). Assessment of fidelity of implementation is according to five criteria: adherence, dose, quality of delivery, participant responsiveness, and program differentiation (Dusenbury, Brannigan, Falco, & Hansen, 2003). This study specifically focused on assessing adherence. Zhang et al. (2011) indicate that tracking

the extent to which modifications of the initial intervention plan occur is a necessary aspect of the process evaluation and assessing the participant's willingness and ability to participate as intended informed modifications. All teachers received the PD regarding increasing learning coach involvement as part of the required annual PD plan from the school. Consequently, the extent to which teachers accepted their role and actively participated was more relevant in this context, especially given that the needs assessment revealed a wide range of teacher investment in supporting student learning.

Adherence. The evaluation of the fidelity of implementation focused on adherance to the anticipated objectives and delivery of the program (Dusenbury et al., 2003). Participant voice was an essential consideration in determining the extent to which the initial design of the program was maintained. Formative feedback regarding the face-to-face PD and virtual PLCs informed the need for modifications to the PLC section of the program. Modifications to the inputs involved in the program design continued to align with the goals of the program (Stufflebeam, 2003). Assessing the extent to which delivery of strategies occurred was necessary to achieve the outcomes related to the extent to which teachers augmented their practices related to increasing learning coach involvement. The next section outlines the outcome evaluation.

Participant response. Participant response intended to measure participant engagement and involvement in the program (Dusenbury et al., 2003). The professional development offered was mandatory for all K-12 teaching staff in the school. Consequently, measuring the level of engagement and reaction of participants was used to evaluate participant response. The evaluation included quantitative measures of questions related to satisfaction, the utility of the PD session, and the implementation of the curriculum presented on a five-point Likert scale (McChesney & Aldridge, 2018). Quantitative data was collected using subscale questions from

the Impact of Teacher Professional Development (ITPD) questionnaire (McChesney & Aldridge, 2018). The reliability and validity of this instrument were examined in terms of factor structure, internal consistency, and the ability to differentiate groups of teachers. Revision of factor structure occurred by the authors before finalizing the instrument. Internal consistency was confirmed through Cronbach's alpha, which ranged between 0.74-0.94 for each scale, which suggests high reliability of the scales comprising the instrument (Field, 2013). The collection of quantitative data regarding teacher response occurred at the conclusion of the face-to-face PD in November.

The qualitative assessment included focus group questions regarding the teachers' reaction to PD, which occurred after the first division specific PLC at the end of January (see Appendix E for focus group protocol). Evaluation criteria of teacher reaction and learning, and the effectiveness in implementing strategies presented during the PD sessions, relied upon the assumption from the logic model that teachers were motivated and interested in increasing learning coach involvement and addressed the external factor outlined in the logic model regarding the need for higher participation from some teachers. The level of teacher motivation to increase learning coach involvement and engagement with the PD sessions could influence the fidelity of implementation, and the formative assessments provided feedback regarding the need for modifications. The next section discusses the outcome evaluation.

Outcome Evaluation

Evaluating the outcome of the intervention involved measuring the changes in characteristics of the focal population and determining the extent to which the intervention was the cause for these changes (Rossi et al., 2004). The mixed methods outcome research questions in this outcome evaluation focused on the proximal outcomes for teachers. This intervention

aimed to achieve the proximal outcome of developing teacher practices at increasing learning coach involvement. Investigation of changes in teachers' behavior occurred with surveys that include closed and open-ended questions of both teachers and open-ended questions for learning coaches. The next section discusses the evaluation design for the study.

Teacher practices. This intervention aimed to support teachers in refining their practices at involving the learning coaches who were supporting elementary and secondary students in online classrooms. Evaluating the extent to which this occurs involved multiple data sources, including both quantitative and qualitative data. Administration of the Teacher Report of Invitations to Parents (learning coaches) occurred pretest and posttest, allowing for a comparison of means of the subscale (Hoover-Dempsey et al., 2002). Additionally, items five through 10 on the ITPD scale provided information from the teachers regarding the extent to which they learned from the PD and their classroom practices incorporated topics from the PD sessions (McChesney & Aldridge, 2018). Qualitative focus group data also investigated changes in teacher practices, the strategies they implemented, and the extent to which they felt prepared for involving learning coaches.

Teacher- learning coach interactions. Qualitative data from both teachers and learning coaches explored changes in the interactions between teachers and learning coaches throughout the school year. In addition to focusing on how interactions have developed throughout the year, the focus groups with teachers included information on why the interactions may or may not have changed, what barriers may remain, and what types of interactions or communications learning coaches seem to respond to best. Open-ended survey questions asked learning coaches how their interactions with teachers changed throughout the year. Additional questions included how the online teachers helped them to engage actively with their students, when the learning

coaches reach out to teachers, and how receptive teachers were when learning coaches reached out.

Method

The research study relied on a quasi-experimental one-group pretest-posttest convergent-parallel mixed-methods assessment of the teachers who participated in the PD (Creswell & Plano Clark, 2018; Shadish, Cook, & Campbell, 2002). Additionally, data from teachers collected mid-intervention focused on their response to the PD and the development of their practices in involving learning coaches, as well as open-ended survey questions from learning coaches after the intervention. Figure 4.3 depicts the quasi-experimental one-group pretest-posttest design as it was applicable to the participant group for this study.

$$\mathbf{T}_A \quad X \quad \mathbf{T}_B$$

Figure 4.3. Adapted depiction of quasi-experimental one-group pretest- posttest research design. (Shadish, Cook, & Campbell, 2002)

Mixed methods research collects evidence from both quantitative methods and qualitative measures to improve the breadth and depth of research (Johnson & Onwuegbuzie, 2004). Mixed methods research relies on pragmatism to consider and apply multiple perspectives quantitatively and qualitatively (Creswell & Plano Clark, 2018; Johnson, Onwuegbuzie, & Turner, 2007; Mertens, 2018; Teddlie & Tashakkori, 2003). This approach places primary focus on the research questions and allows for practicality to guide the methods applied (Creswell & Plano Clark, 2018; Johnson et al., 2007; Onwuegbuzie & Leech, 2006; Teddlie & Tashakkori, 2003).

Participants

The outcome evaluation included two groups: the teacher participants and learning coaches. Invitations to the entire population of both teachers and learning coaches occurred

through non-probability purposive sampling methods (Pettus-Davis, Grady, Cuddeback, & Scheyett, 2011). At pretest data collection, 56 teachers consented to participate reflecting 55% of the teaching staff. At the posttest data collection 31 teachers consented to participate, reflecting 25% of the teaching staff. Approximately one-third of the teaching staff was new to the school and possibly new to online teaching (see Appendix F for teacher recruitment email). See the beginning of chapter five for additional characteristics and demographic information about the teacher who participated in the pretest survey.

There were 1861 students enrolled in the cyber charter school at the end of the intervention, each of whom worked with an in-person learning coach. There were 408 unique responses to the learning coach survey, resulting in a 22% of learning coaches consenting to participate. Most learning coaches were parents of the students they are working with, although some learning coaches may have had other relationships with students such as other family members or, at times, the family may have hired a learning coach. The student population tends to be approximately two-thirds socioeconomically disadvantaged as measured by their parents' reported income. This demographic finding suggests most the learning coach population were socioeconomically disadvantaged as well. Located across the state, learning coaches have varying levels of previous educational opportunities, and computer knowledge and technology experience (see Appendix G for learning coach recruitment email).

Measures and Instrumentation

Research questions and information gathered during the needs assessment guided the selection of the measures and instrumentation for this intervention. The implementation of a parallel convergent design, with the collection of quantitative and qualitative data concurrently, allowed the collection of complementary data to provide a broader understanding of the research

questions (Creswell & Plano Clark, 2018). Focus groups provided robust qualitative data from teachers, while open-ended survey questions to teachers and learning coaches allowed responses from a potentially higher number of participants. Utilizing questionnaires to collect qualitative data may not be as rigorous as other methods of qualitative data collection, which caused this evaluation design to favor the quantitative data set (Creswell & Plano Clark, 2018). The selection of this approach reflected the researcher's belief that using open-ended questions to collect qualitative data was likely to result in the greatest level of participation from both teachers and learning coaches. The larger sample size resulted in the participant groups more accurately representing the population, which in turn may have increased the validity of the investigation. The specific instruments used are discussed next.

Teacher survey. Administration of the pretest survey for teachers occurred before the delivery of the initial PD session in August (see Appendix H for pretest survey). Administration of posttest surveys occurred in the spring after the conclusion of the intervention and before the state testing window (see Appendix I for posttest survey). The pretest survey of teacher participants included 15 close-ended questions on a six-point Likert scale from the Teacher Report of Invitations to Parental Involvement subscale of the Teachers Involving Parents (TIP) in-service questionnaire (Hoover-Dempsey et al., 2002) as well as additional questions focused on demographic data. The posttest survey of teacher participants included the same 15 questions from the TIP subscale as well as six closed-ended questions from the ITPD instrument focused on teacher learning and outcomes from the PD sessions and open-ended questions. The ITPD scale is on a five-point Likert scale (McChesney & Aldridge, 2018). There was an additional mid-intervention survey of teacher participants that included four questions focused on their

satisfaction and the usefulness of the PD sessions, as well as soliciting volunteers to participate in focus groups or interviews (see Appendix J for mid-test survey).

Learning coach survey. After the intervention, learning coaches were surveyed with four open-ended questions. These open-ended questions aimed to assess changes in the interactions between teachers and learning coaches through the course of the school year and how teachers support learning coaches in actively engaging with their students (See Appendix K for learning coach survey).

Procedures

Recruitment

Data collection occurred from the two groups of teacher participants and learning coaches for this study. Recruitment for the teacher population occurred via an email sent by the professional development coordinator at the school. Request to participate in the post-intervention data collection occurred during the final professional development. Additionally, the PD coordinator of the school and the principals supported finding teachers willing to participate in the focus group. The PD coordinator solicited the support of principals to select through purposive sampling teachers who were from each division of the school, teaching a range of content areas, varying levels of teaching experience, and geographically from across the state. There were 1861 students enrolled in the school at the end of the intervention, each of whom were working with a learning coach and were eligible to participate. Recruitment of learning coaches occurred through emails with a link to the survey sent by the administration of the school.

Tailored design of emailed communications encouraged participation during each round of data collection for teacher participants and the survey of learning coaches (Dillman et al.,

2014). Surveys were available to participants for approximately a one-week window. Reminder emails were sent three times during the one-week window: the initial sending, in the middle of the week, and one day before the survey closing.

Intervention

The first phase of the intervention included a series of three face-to-face PD sessions. The first two sessions lasted four hours each in August and occurred during the regularly offered in-service window at the start of the school year. In November, there was a one-hour virtual session for all teachers, followed by two hours of face-to-face contact time with each division of the school. The second phase involved a series of eight PLC sessions, each lasting one hour, that occurred both with the full teaching staff and in smaller division specific groups.

Returning teaching staff received PD to increase learning coach involvement before the start of this intervention. Therefore, delivery of the first session was expressly to new teachers. This initial session aimed to provide a foundation for learning coach involvement that aligned with the school practices and the topics previously covered. The second session during the in-service PD in August built upon the knowledge from the earlier PD for returning faculty and the previous days PD for new teaching staff. The next in-person PD session occurred at the beginning of November. The PLC sessions were held twice per month from December through March. Two of the PLC sessions were for all teaching staff, two for elementary teachers, two for middle school teachers, and two for high school teachers. Teachers received a total of 12 hours of direct content development in increasing learning coach involvement for returning faculty, and 16 hours of direct content development for new teaching staff to the school. The next sections outline each PD session, with more detail regarding the objectives and activities available in Appendix L.

New teacher in-service. The initial face-to-face PD session provided new teachers to the school with a foundation for supporting learning coaches and the roles, responsibilities, and resources for teachers working with learning coaches. This initial session also included information regarding how to extend a warm welcome to learning coaches at the start of the school year and how to address common learning coach concerns. This introductory session reviewed school procedures and policy regarding the identification of disengaged learning coaches, and the administrative support available to teachers to facilitate increasing learning coach involvement, including the Family Academic Support Team at the school. Learning activities included opportunities for new teachers to draft a script for an introductory phone call to their learning coaches and talk through how they would respond to difficult learning coach conversations and interactions.

Full teaching staff in-service. The second day of in-service in August offered PD to all teachers. This PD began with reinforcing the importance of learning coach involvement as central to student success, the three-legged model upon which the school relies, and the importance of the role of the learning coaches. This session included an expert panel of learning coaches who presented virtually to the teachers. Learning coach experts shared their motivations for selecting online learning, and this school in particular, as well as what teachers have done in the past to support them and build a collaborative partnership.

The session continued with an analysis of teacher beliefs regarding learning coach involvement concluding with their ability to influence learning coach involvement. Teachers built on prior knowledge in a discussion of their best and worst experiences with parents or learning coaches and reflected what they have learned from both types of experiences. Teaching staff then outlined the specific strengths of their positive interactions with parents and learning

coaches. Teachers were provided with problem scenarios and discussed possible provided solutions as well as created new solutions. Further, teachers explored and discussed their reactions to difficult situations, how their responses affected outcomes, and the benefits of reflecting on their teaching practices. The PD resulted in the creation of a resource list for teachers of different ways to engage learning coaches, which the researcher shared with teachers after the conclusion of the PD.

The November PD included a one-hour virtual session, followed two days later by the final face-to-face PD. The initial one-hour virtual session with all teachers reviewed current research and approaches to increasing family, school, and community partnerships, and specifically outlined six domains in which we can consider increasing learning coach involvement (Epstein et al., 2019). The subsequent face-to-face sessions included two 1-hour sessions with each division of teachers- elementary, middle, and high school. The first in-person hour focused on brainstorming ways that groups of teachers or divisions can increase learning coach involvement as an academic team. Beginning with a brainstorm of brick and mortar school practices for engaging parents, small groups modified traditional practices to implement in their cyber charter school. Once a shared list of possible ways for teachers to collaborate in inviting learning coach participation was established, the second hour involved small content or grade specific groups working together to decide on a common group strategy or initiative to implement.

Professional learning community sessions. Throughout the remainder of the PLCs, the focus was on supporting teachers in implementing and revising strategies for engaging learning coaches. Sessions occurred in smaller break out rooms to foster collaboration. The first all teaching staff PLC provided an opportunity for several groups to present on their plan and first

steps in increasing learning coach involvement and solicit feedback from peers. Teaching teams then worked together to determine what role and responsibility each person had in their group initiative, the timing of their plan, how they encouraged learning coach involvement, and what resources they needed. Before concluding, each team completed an action plan worksheet to record their specific procedure for implementation. The subsequent division specific sessions allowed for break-out sessions for small groups to continue to work on and revise their efforts to increase learning coach involvement. The final PLCs was a virtual poster board session with groups sharing brief presentations on what they have worked on this school year to increase learning coach involvement.

Data Collection

The purpose of the research study was to investigate the development of teacher practices at involving learning coaches in elementary and secondary online classrooms. Data collection for the first process question occurred ongoing throughout the intervention in the form of researcher notes. Data collection for the second research question occurred mid-intervention with both a brief survey of teachers and a focus group with teachers. Process evaluation specifically focused on the teachers as the intervention involved providing PD to teacher participants exclusively. Data collection for outcome questions occurred before and after the intervention with teachers, and after the intervention with learning coaches. The next sections outline the process and outcome evaluation data collection.

Process evaluation indicators. The process evaluation questions focused on adherence to implementing the plan for intervening as intended and teachers' response to the PD. Discussion of each indicator follows.

Implementation as intended. For the first research question the researcher compared the plan created in advance to notes that reflected what happened during the PD sessions. Changes from the initial plan reflect the extent to which the intervention maintained fidelity of implementation with regards to adherence (Dusenbury et al., 2003).

Teachers' response. The indicator for the second research question was the teacher participants' reaction to the face-to-face PD session. Participant reactions included their enjoyment of the PD and how beneficial and useful they felt the PD was to their teaching. The quantitative measure relied on the ITPD questionnaire (McChesney & Aldridge, 2018), with the subscales for this indicator specifically measuring teacher reaction to PD. The first two questions assessed enjoyment and satisfaction, and the third and fourth questions evaluated the usefulness of the PD (McChesney & Aldridge, 2018). Focus group data further allowed teacher participants to offer robust qualitative feedback. The topics of the focus group relating to this research question included their enjoyment and satisfaction of the face-to-face PD session, what aspects of the PD were most useful to teacher participants, and what additional related topics they would like included in subsequent PLCs. The collection of data regarding this indicator occurred mid-intervention via an emailed survey form after the final face-to-face PD session. Focus groups occurred after the first division specific PLCs. This indicator aligned with the delivery of the PD outlined in the theory of treatment and logic models and aimed to measure the increase in teacher knowledge and engagement in the process of involving learning coaches that are outlined as a goal in both models as well. The next section addresses the outcome evaluation indicators.

Outcome evaluation indicators. Outcome evaluation indicators focused the development of teacher practices to increase learning coach involvement, and changes in how

teachers and learning coaches interacted after teachers' participation in PD focused on increasing learning coach involvement. A discussion of these indicators follows in the next sections.

Teacher practices. The first research question focused on changes in teachers' practices to solicit and increase effective learning coach involvement. This indicator aligned with the short-term goal in both the theory of treatment and logic models to increase strategies available to teachers for involving learning coaches. The Teacher Report of Invitations to Parents (Hoover-Dempsey et al., 2002) provided quantitative measurement of changes in the strategies used and focus group data provided additional information regarding which strategies were most effective in soliciting learning coach involvement. Learning coaches additionally responded to open-ended questions in the posttest survey reporting on the ways that teachers helped them to engage actively with their students.

Teacher- learning coach interactions. The indicator for the final research question was teacher-learning coach interactions. Collection and analysis of qualitative data from both teacher participants and learning coaches occurred. Qualitative data from the teacher participants were collected during the focus groups after the first division specific PLCs. Data collection from learning coaches occurred through open-ended survey questions at the conclusion of the intervention. The next section outlines data analysis.

Data Analysis

RQ1 evaluated the fidelity of implementation regarding adherence through review and analysis of researcher notes. Given that quantitative data was collected once mid-intervention, RQ2 used descriptive statistics to analyze the quantitative results from the questions from the ITPD scale (McChesnesy & Aldridge, 2018) and describe the teacher experiences with the PD to

increase learning coach involvement. RQ2 additionally integrated the analysis of qualitative data using inductive coding and thematic analysis from the focus group data regarding teacher response. Inductive coding allowed for codes to emerge through the analysis process, and can, therefore, be more empirically grounded (Miles et al., 2014). Analysis of RQ3 included a t-test to demonstrate changes in the mean values for the Teacher Report of Invitations to Parents subscale pre and post-intervention (Hoover-Dempsey et al., 2002). Additional data for RQ3 included items from the ITPD scale (McChesney & Aldridge, 2018), which was analyzed using descriptive statistics, and qualitative data from focus groups, which involved inductive coding and thematic analysis. The final research question focused on teacher-learning coach interactions and relied upon qualitative data analyzed using inductive coding and thematic analysis, and quantitizing the qualitative data. The next chapter discusses the findings from the intervention.

Chapter 5: Findings and Discussion

The purpose of this intervention was to support teachers in augmenting their practices in involving learning coaches in an online school. Chapter four presented a research study designed to provide both structured professional learning about increasing learning coach involvement and virtual professional learning communities aimed to support the implementation of teacher initiatives. The intervention occurred in August 2019 through the end of March 2020 during the school's third year of operations. This chapter will report findings on the previously mentioned four research questions:

Process questions:

RQ1: To what extent was the PD to increase learning coach involvement implemented as intended?

RQ2: What are teachers' experiences with the PD to increase learning coach involvement?

Outcome questions:

RQ3: In what ways have teachers augmented their practices to increase learning coach involvement after participating in PD to increase learning coach involvement?

RQ4: How do the interactions between teachers and learning coaches change after teachers' participation in the PD to increase learning coach involvement?

Recruitment, Sampling, and Teacher Characteristics

All teachers were required to participate in the structured professional learning and the virtual PLCs as part of the ongoing professional development requirements of the school. Subsequently, invitations were sent to all teachers to participate in the research study. As this is a new school, teachers were hired throughout the school year as the school grew. At the start of the school year, there were a total of 102 teachers employed by the school, which yielded 56

consenting participants. At the posttest, there were 125 teachers employed with the school, which produced 31 consenting participant responses. However, there were only eight matched pairs between the pretest and posttest, so final comparative analysis occurred with all data points. Conducting analysis on all data from pretest and posttest was determined appropriate as the teacher characteristics reflected a reasonably homogeneous population, which the next paragraph explores further. Initially, invitations to all teachers for the mid-intervention focus groups occurred; however, after repeated unsuccessful attempts to recruit participants, the researcher solicited the support of the principals to approach individual teachers. Purposeful sampling resulted in four teachers participating in the focus group, one first grade teacher, one eighth grade Language Arts teacher, one high school Spanish teacher, and one high school Social Studies teacher. All four teachers have worked at the school for the duration of the school year, with one starting during the school's first year of operations, two starting in the second year, and one starting at the beginning of the current school year.

Gathering of teacher demographic characteristics occurred during the pretest survey. Most teachers were White (95%) women (88%) with master's degrees (71%). The data indicated that there were three minority teachers, two of whom identified as African American and one of whom identified as Asian/ Pacific Islander. One teacher reported having a doctoral degree, while 27% earned bachelor's degrees. Teachers ranged in age between their 20s, with one participant more than 60 years old, and most teachers were between 30-34 years (31%) or between 35-39 years (27%). Eighty-nine percent of teachers taught in a face-to-face classroom before teaching online. Responses indicated that teachers have been teaching online for as long as 13 years. However, 70% of the teachers had been teaching online for two years or less. Twenty-nine percent of teachers had been with the school since their first year of operations in 2017-2018,

45% started in or before January of the 2018-2019 school year, 20% started between February and June of the 2018-2019 school year, and the remaining 7% were new to this school in the 2019-2020 school year.

Teachers were from all three divisions of the school, with elementary teachers representing 34% of those surveyed, middle school teachers representing 28%, and high school teachers representing 38%. Most teachers were providing required content courses (69%), with a few teaching credit recovery courses (4%) and the remaining reporting that they were in the category of other (27%). The other category included learning support specialists, intervention sessions, special education, and remedial coursework. Teachers also reflected all content areas, including Mathematics (28%), English/ Language Arts (25%), Science (17%), Social Studies (17%), Physical Education (1%), Art (1%), and Other (10%). The majority reported in the Other category were Special Education teachers, including reading intervention, life skills, and general special education, with one report of teaching writing, one report of English/Language Arts, and two participants indicating that they were not teachers. While it is unknown the role these individuals held within the school, the survey was inadvertently shared with all staff within the school so that they could have been administrators, support staff, or several other types of employees.

Finally, learning coaches participated in a survey at the conclusion of the intervention. The aim of soliciting input from learning coaches was to gain insight into their perspective of how teacher practices have changed throughout the school year and how they perceived their interactions with teachers. The open-ended survey questions were sent initially to 1861 learning coaches, each of whom was working with a student enrolled in the school. Four hundred ninety-four learning coaches responded, which resulted in 26% consenting to participate. However,

sending the survey to all learning coaches repeatedly resulted in multiple responses from some learning coaches. Consequently, there were a total of 408 unique participants, resulting in 22% of learning coaches consenting to participate.

Implementation as Intended

To answer the first research question describing the process of implementation is necessary to answer the extent to which implementation of the intervention occurred as intended. This process includes details about each session of structured professional learning and the virtual PLCs, as well as chronologically accounting for discussions and updates provided by the school that impacted the implementation of this intervention. Researcher notes from throughout the study inform analysis of the adherence to the intended plan.

Session 1

The first structured, face-to-face professional learning session occurred with new teachers during the in-service week prior to the start of the school year. Forty-four new employees were present, 33 of whom were teachers. Other professionals included school psychologists, guidance counselors, a family resource coordinator, a transportation coordinator, a school nurse, and advisors who work as liaisons between the school and the learning coaches. The original time allotted for this session was 4 hours, yet schedule revisions resulted in approximately three contact hours for this session. This initial session was created and modeled after presentations previously shared with existing staff at the end of the previous school year. The researcher principally adhered to a PowerPoint presentation that included interactive activities, including role-playing, think-pair-shares, case studies, and responding to knowledge check questions. Minimal deviations to the presentation occurred in response to teachers' reactions and content that had been updated by the school unbeknownst to the researcher. One administrator shared the

phrase for considering learning coach perspectives, “assume positive intent,” which remained relevant and actively applicable throughout the intervention.

Session 2

Initially, the schedule for the second session was in two segments, one hour followed by a lunch break, then the remaining three hours. However, when the school provided the PD schedule, the timing had been decreased from four hours total to one session lasting three and a quarter hours in one block. When the researcher arrived, the schedule was adjusted again resulting in the second session consisting of a total of two and a half contact hours.

Additionally, the researcher initially anticipated presenting to the teaching staff exclusively. However, the PD schedule included all staff in an auditorium-style room. There were 94 teachers present and approximately 35 other staff and approximately 12-20 additional administrators. Modifications to the planned collaborative activities occurred yet monitoring of these activities was challenging because of the higher number of people, and the auditorium-style seating arrangement, which did not allow for workspace.

After a brief introduction, the session began with a learning coach expert panel so that teachers could appreciate the learning coach's perspective of learning within the school, positive interactions with teachers, their goals for their students, and suggestions for teachers working with learning coaches. However, the selection of this panel was by the school administration and therefore presented a very positive, enthusiastic view, about which some teachers expressed concern. The several slides that followed the learning coach expert panel led to a robust discussion. This discussion included challenging questions such as “What can we do about the learning coaches who have a different experience and value of education [than we do], especially the learning coaches who have never graduated from high school and don’t think it matters if

their child does?" and " In high school, how involved can the parents or learning coaches be if they aren't home?"

As planned, the presentation of problem-solution scenario cards to staff followed. The objective was for teachers to pair solutions with the various common problems they had previously reported to the school. Each group received several varied questions initially, and then staff regrouped according to each specific question to come up with additional strategies and alternative solutions. Teachers appeared engaged and participatory, yet of the ten problems presented, only four had additional solutions offered, and three of the four only had one alternative solution. The researcher compiled the provided scenarios and solutions, as well as the one created from the staff, which the PD coordinator shared with the school staff. At the conclusion of the second session, the researcher outlined a plan for teachers to engage actively in Plan-Do-Study-Act (PDSA) cycles of improvement science (Bryk, Gomez, Grunow, & LeMahie, 2015; Lewis, 2015; Perla, Provost, & Parry, 2013) throughout the school year, making iterative changes to develop their practices gradually

In the first week of the school year, the administration ran into difficulties with adhering to the researcher's pre-approved plan for PD delivery. A video conference with the primary investigator, the CEO and executive sponsor, the executive director, the head of the student services team, the PD coordinator, and the principals of each division of the school occurred to address the scheduling challenges. The meeting resolved the problem with the subsequent PD session being divided into one-hour of virtual meeting time on the Wednesday before the next face-to-face session, and then the face-to-face sessions structured as two 1-hour sessions with each academic division of the school. This change aimed to differentiate the intervention for the various elementary, middle, and high school divisions and to provide more time for teachers in

their PD schedule for other initiatives. The altered scheduling resulted in a one-hour decrease in contact hours in the scheduled PD as opposed to the three-hour reduction initially proposed.

Session 3

As previously mentioned, the third session began with a virtual presentation, then continued in person two days later. The virtual presentation was delivered with fidelity and addressed Epstein et al.'s (2019) framework for family, school, and community partnerships. Time was made available for questions at the end, but teachers did not have any responses, so the session ended a few minutes early.

The subsequent face-to-face PD happened in two one-hour sessions with each division of the school. The morning sessions included a review of the six keys of family, school, and community partnerships (Epstein et al., 2019); a brainstorm of ways that teachers have included families in traditional brick and mortar schools and how those approaches might translate to an online classroom; and time to collaborate within their small grade or content level groups to establish group initiatives for involving learning coaches. In the elementary and high school groups, the first hour adhered to the plan, with teachers engaged and responsive. In the middle school division, not all teachers were using collaborative time as intended, with one group off-topic. Both the middle and high school teachers indicated that most learning coaches do not attend face-to-face events, which was a suggested time for increasing learning coach involvement. Consequently, teachers were encouraged to consider the possibilities for involving learning coaches within their classrooms or through other virtual interactions as opposed to during face-to-face events.

The afternoon session intended to provide additional collaboration time, followed by sharing their group plans and soliciting peer feedback. However, at the start of the first session

with the elementary school, the teachers expressed interest in hearing the brainstorming information from the other divisions. As a result, the second session with each group was modified to include reviewing the ideas that each division had for increasing learning coach involvement. Ideas included live events such as promotion ceremonies and prom, as well as virtual events such as career fairs highlighting learning coach careers, parent information nights, and events that showcase student work such as a wax museum, talent show, concert, and science or math fairs. This sharing of ideas provided an excellent resource for teachers, many of whom seemed to appreciate new ideas that had not occurred to them previously. Teachers then had a truncated amount of time to collaborate and settle on what they would be doing as a group for their initial effort to increase learning coaches within their teaching teams, before sharing with their school division. Additionally, both the sessions with the middle and high school were slightly abbreviated in response to the schedule for the day.

At the end of the second session, each teaching team had planned a group initiative with which to move forward. However, it was evident that the initiatives differed in scope, sustainability, and direction. Some examples that were likely to increase learning coach involvement included a family of the week (elementary), a monthly newsletter (middle school), and family fun Fridays (high school). Some examples that were less focused on increasing learning coach involvement included in-person graduation (elementary), monthly random acts of kindness (middle school), and sending click-bait to get learning coaches to open their emails (high school). Each of these groups was encouraged to continue to consider ways to increase learning coach involvement throughout the process, including assessing the effectiveness of their efforts, and finding ways to refine their initiatives to continue to enhance learning coach involvement.

Virtual Professional Learning Communities

The first virtual PLC included all the teachers from the school. The intent initially was to hold a virtual poster board session in which all teachers could share their progress on their first efforts to involve learning coaches, the success they had to date, and solicit support for any challenges. The goal was to support teachers in refining their teaching practices and share practical strategies. However, modifications to the plan occurred in response to the CEO wanting the time to be used as working sessions for teams to continue to collaborate. The CEO suggested one volunteer from each division share their efforts in the initial virtual PLC, with the remainder of the time teachers in break out rooms for collaboration. The researcher and the CEO further agreed that the division-specific PLCs would continue to rely on break out rooms for collaboration, and the final PLC would be a virtual poster board session for teachers to share what they have done throughout the year either as individuals or within their teaching teams.

First professional learning community with all teachers. Before the first session, the PD coordinator found teachers from each division to share their progress with increasing learning coach involvement. Teachers were dynamic and excited about what they were doing so far, and other teachers asked questions and were engaged in the results. All three presenters were using Flipgrid to increase communications with families, and this was a new platform for some teachers who were eager to learn more. Flipgrid seemed to be a viable option for teachers to create short videos to share with families or to have families create short videos to share with the class.

The subsequent organization of breakout rooms were according to grade-level teams for kindergarten through eighth grade, and according to content area for high school teachers. The researcher circulated throughout the remaining time to the various breakout rooms to answer

questions, lend support, and provide feedback. High school teachers shared that the Career and Technical Education (CTE) teachers were attending an in-person professional development day and that many of the high school teachers were absent because they were proctoring and administering a state competency assessment. Further, several of the breakout rooms had no teachers when the researcher entered the room.

While delivery of the structured part of the session was according to plan, the less formal collaboration time was not used by teachers as intended. Of the 14 teaching teams, nine had no specific objectives outlined in the shared Google tracking template. The PD coordinator indicated that most of the middle school teachers were administering state exams, much like the high school teachers. She further stated that it is commonly acceptable for teachers to leave when they think they have completed the task, which may have explained some of the empty breakout rooms.

Division specific professional learning communities. The next six PLCs were division-specific, with two one-hour sessions for elementary, middle, and high school occurring at different times throughout the winter. The first division-specific session began with a brief presentation reviewing the intent of the shared Google template and outlining the expectations for that day. The elementary division of the school used their time in the first session well, with each teaching team clearly outlining discrete steps to implement their initiatives as well as the timing and division of responsibility. One grade had already initiated their planned efforts with initial reports of limited responses from learning coaches.

During the second elementary specific PLC, teams continued to collaborate on their efforts to increase learning coach involvement. While speaking with one elementary grade team, several comments indicated that they were just getting started, such as, “We just started doing it,

so we'll see…" (Teacher, personal communication, February 5, 2020). Given the request of the CEO to have the PLC time dedicated to collaboration, the elementary teams adhered to the plan with fidelity. However, the initial idea to progress through PDSA cycles to make iterative improvements did not occur as intended as teachers were not expected to collaborate outside of the virtual PLC sessions and elementary teachers were shifting to new initiatives rather than refining their previous strategies.

The first middle school session included some group efforts not focusing on increasing learning coach involvement, with one middle school team working with their students on random acts of kindness (RAK). The teachers expressed that learning coaches were not involved at the middle school level anymore and that it was hard to pull them in. In alignment with the intent of the PD, the researcher encouraged them to increase learning coach involvement in this initiative, suggesting possibly interviewing the learning coaches about their RAKs or having a RAK competition between learning coaches and students. One teacher within the group responded, "All good suggestions." (Teacher, personal communication, January 8th, 2020). When the researcher returned to this team later in the session, there were some efforts to increase learning coach involvement in the RAK initiative. However, the level of active engagement and participation within the middle school division was lower than that of the other two school divisions.

Before the start of the second division-specific PLC for middle school teachers, the PD coordinator noted that many of the teachers were attending an in-person technology conference and would not be present in the virtual PLC. At the start of the session, there were 26 participants in the virtual room, which included the researcher, PD coordinator, administrators, and teachers. One teaching team expressed frustration with their efforts to increase learning coach

involvement. However, this teaching team was not utilizing the Google spreadsheet to record initiating their group efforts, with only four of the 12 people within the group assuming responsibility for tasks related to their group efforts. In alignment with the intent of the professional development, they were encouraged to create a clear outline of who would be doing what to reach their group goals and objectives in an effort to minimize the frustrations they were experiencing. When the researcher returned later to follow up on their progress, one teacher noted, “We have assigned many slides to many names.” (Teacher, personal communications, January 8th, 2020).

In the second session, another middle school grade was upbeat and positive about their progress, having had success with holding “how-to” sessions for learning coaches. They were continuing to hold these “how-to” sessions and additionally were adding learning coach and student study halls to answer questions as well. A different middle school teaching team felt as though their initial efforts were not effective and started a new plan to increase the level of activity for both students and learning coaches. The new plan involved using their existing grade wide Padlet to promote student and learning coach events and activities such as a nature scavenger hunt, starting a garden, or going for a hike. Additionally, they were reminding families of the grade wide Padlet through weekly communications. All three middle school grades were refining their practices at how best to engage learning coaches, and eventually were making progress towards their group efforts.

The teachers in the high school division PLCs were focused and on topic, with good discussions and participation. However, several groups were starting new efforts and either discontinuing the strategies they were previously starting or had not had a chance to start in their small groups due to absences in previous collaboration sessions.

The second high school PLC session was successful, with the PD coordinator and the principal circulating throughout the rooms to support, encourage, troubleshoot, and actively engage with teachers in refining their practices to increase learning coach involvement. However, some of the teachers' efforts remained focused on supporting students. The principal would reliably offer suggestions for how to build upon their support of students to involve learning coaches more. Additionally, one group spent time reviewing what other teaching teams were doing in the shared spreadsheet, and another group reached a stopping point with their efforts mid-session and decided to work on individual tasks for the remainder of their time in the breakout rooms. Overall, teachers were actively discussing their plans, staying on task, and using their time constructively.

Final PLC virtual poster board session for all teaching staff. Throughout the division-specific PLC sessions and the focus group, several teachers expressed interest in finding out what other teachers were doing, how successful they were, and what they could learn from each other. As a result, the final virtual PLC session allowed teachers to share what they have learned throughout the year in a virtual poster board session. The researcher invited all teachers in the final division-specific PLCs to present in the virtual poster board session, yet there were no volunteers initially. The researcher solicited the support of the PD coordinator, who then included the principals. Additionally, the PD coordinator specifically asked a representative of the high school electives team to present as they were piloting a showcase/gallery night, which was unique compared to the efforts of other groups. While initially the researcher hoped for full participation, the request of principals was for each division to have two to three teaching teams or individuals present. The elementary principal solicited the support of three teaching teams.

Unfortunately, after several points of contact, the other administrators were not able to solicit volunteers for the virtual poster board session.

The final virtual poster board session intended to include all teachers within all three divisions of the school, which was 125 teachers. However, the start of the session included 65 individuals present within the online classroom, which included the researcher, PD coordinator, and several other administrators. By the conclusion of the session, there were a total of 82 people present, which is notably different from the full number of teachers in the school. Each teaching team presented as expected, with active participation in the chatbox, suggesting that teachers were listening and engaged. As a result of the small number of presenters, the poster board session ended early, after approximately 40 minutes.

When addressing the extent to which implementation of the intervention was as intended, it is essential to consider the balance between the plans as opposed to modifications responding to context, administration requests, and participants. Dusenbury et al. (2003) suggest that there is no clear guideline as to when it is appropriate to adhere to planned implementation as opposed to making iterative improvements. While structural changes occurred, the intent was maintained, and changes appropriately aligned with the needs of the context and participants.

However, the dose received by teachers of the school likely varied significantly from the intended plan as attendance and participation were pervasive issues. The primary example of the variation in dose was the number of teachers present in the final virtual poster board session. Further, there were several virtual sessions with lower than anticipated participation due to teachers attending other face-to-face PD conferences or teachers proctoring student testing. Additionally, for teachers in attendance, some did not use their time as intended during the PD sessions. At times teachers marked themselves as away from their computer. Given that the

revised plan was deliberate, the findings of this first research question suggest that the implementation of the PD for teachers to increase learning coach involvement was as intended. However, the additional critical note indicates the intervention was likely not received as expected due to scheduling changes and the lack of some participants' engagement in some sessions.

Teacher Response

Addressing this research question included analysis of the Impact of Teacher Professional Development (ITPD) Questionnaire items focused on teacher reaction, in conjunction with data collected from teacher responses during the focus group (McChesney & Aldridge, 2018). There were 46 complete responses to the mid-intervention survey, which reflects a consent to participate of approximately 41%. However, the school continued to hire throughout the school year in response to student enrollment needs. There were 102 teachers employed by the school at the start of the school year. The school employed 122 teachers at the end of November during the administration of the mid-intervention teacher response survey and 126 teachers by the end of January when the focus group occurred. Consequently, there were more than 20 teachers whose employment started since the beginning of the school year who may not have had exposure to the entirety of the intervention.

When reflecting on their experiences to date with the PD sessions, participants reported “strongly agree” or “agree” more often than “neutral” or “disagree” for all questions. Specifically, participants reported highest levels of agreement with the statement of their having positive memories of the PD sessions (47% “agree”), with another 17% “strongly agree,” and 30% “neutral” regarding this criterion. When reporting on their enjoyment of the PD sessions, teachers responded predominantly “neutral” (41%) but continued to report notable levels of

"agree" (33%) and "strongly agree" (13%). Similarly, when asked the extent to which the PD has been beneficial to their teaching, teachers again responded primarily "neutral" (41%), with almost as many teachers reporting "agree" (37%) and fewer "strongly agree" (9%). The final question inquired their agreement of the usefulness of the PD sessions, with some reporting "strongly agree" (13%), the majority "agree" (41%), and almost as many responding "neutral" (37%). Of each of the criteria asked, no teachers reported "strongly disagree." Some teachers did indicate disagreement with each of the statements, with 13% reporting "disagree" to "I enjoyed this professional development very much" and "This professional development has been very beneficial to my teaching." Seven percent reported "disagree" with "I have positive memories of this professional development," and 9% indicated "disagree" with "Participating in this kind of professional development is very useful for my teaching." See Figure 5.1 below.

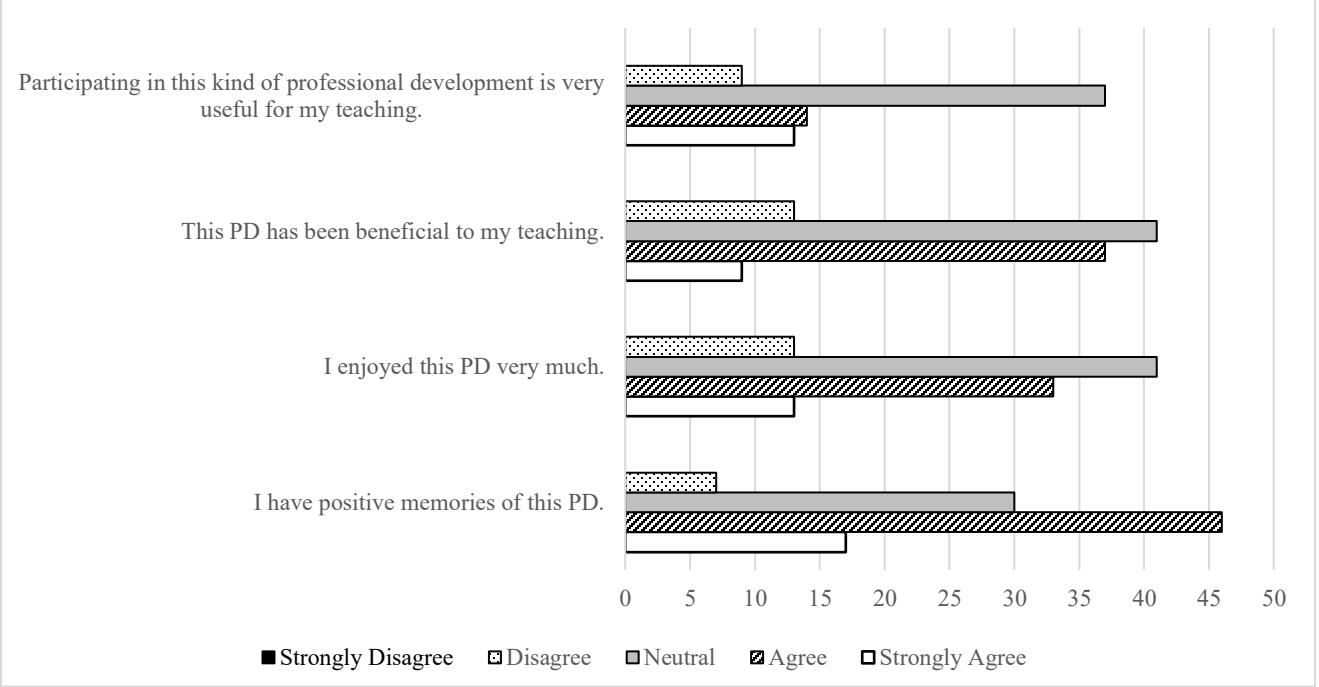

Figure 5.1. Teacher Response to PD sessions.

When considering the qualitative findings from the focus groups for this research question, the two themes revealed were benefits of the PD and unexpected aspects of the PD. The codes identified for the benefits of the PD included satisfaction and collaboration. The codes identified for the theme of unexpected aspects of the PD included PD scheduling and a different direction for the PD.

The consensus was that teachers were satisfied with the PD sessions. Teachers indicated, "I've been satisfied" (Teacher 4) and "I think at the high school level, we've been satisfied overall" (Teacher 1). Teachers also indicated that they appreciated the opportunity to collaborate with colleagues, with teachers stating, "brainstorming with other teachers was useful" (Teacher 2), and "I think at least a little collaborative time is always good" (Teacher 3). Additionally, teachers reported appreciating the one-hour virtual PLCs more than the in-person sessions:

> I think with actually having time during the day to work in our groups like we had yesterday, I think that that was a lot more effective for us, and we definitely appreciated that… a lot more than taking a two-hour chunk and doing it at once. We like having it broken up into those Wednesday sessions. That helps us a lot. (Teacher 1)

While the teachers preferred the virtual PLCs to the longer in-person sessions, and there were some scheduling challenges, qualitative findings from the focus group confirmed the overall positive response from teachers on the ITPD questionnaire.

However, teachers indicated that there were some challenges and unexpected aspects as well. Specifically, during the in-person PD in November, teachers were surprised that time was devoted to increasing learning coach involvement:

> I know with the PD in November, we were kind of-- we were a little bit taken aback because we originally had received information saying that we would have time to work

> in departments on academic content. And then we didn't get to do that at all. We were like, 'Oh, man! Now we don't get any time to do any of the teamwork and we never get to see each other.' So it started off with a little bit of a negative tone… (Teacher 1)

Teachers further indicated that while they thought there was likely a plan in place ahead of time, initial communications did not include the PD to increase learning coach involvement. The implication was the intervention PD was added to the schedule in place of time for teachers to work in their departments on academic content. While the intervention schedule was pre-arranged, and the purpose shared with teachers, teachers were unaware of the schedule for professional development. Although teachers recognized the circumstances were likely beyond the control of the researcher, their disappointment could have impacted their willingness to participate in the PD as well as their response to the PD.

Another important finding from the focus group was that although the PD was beneficial, the experience was different from what they anticipated:

> I think that it kind of took me in a different direction than what I expected and maybe even some of my fellow elementary teammates. We really were thinking of fun ideas… they all are fantastic, but it made me wonder for me and for my class, knowing my students, am I starting too big? Does it need to be something small? … how can I get the people that aren't involved, involved? … And that's what caused me to lead me to look at the way I use my class connect sessions differently. So, I think that it was very beneficial, but it didn't end up the way I expected it to. (Teacher 4)

This teacher reported needing to move in a different direction in response to her student's needs, which suggests that the PD was both beneficial and useful to her teaching practice. Although this

teacher was surprised by needing to take a different direction, her overall response to the focus on increasing learning coach involvement was positive.

In conclusion, while there was some variation in the feedback provided, most teachers felt positive about their experiences with the PD to increase learning coach involvement. Further, most teachers agreed that the PD was beneficial (37% "agree," 9% "strongly agree") and useful (41% "agree," 13% "strongly agree") to their teaching practices. The qualitative data provided additional insight into the teachers' experiences, suggesting satisfaction with the PD with specific emphasis on their appreciation for the virtual PLCs. Teachers also noted that they were surprised at times both by scheduling changes as well as the PD supporting them in moving in a different direction than they anticipated.

The process questions reflect that fundamentally the intervention was as intended and that teachers' experiences and response to the PD were positive overall. While there was a decrease in the total number of contact hours with teachers, the PD was embedded throughout the school year and offered ongoing opportunities for development. Flexibility in the intervention delivery allowed for modifications in response to the needs of the teachers and school. The following sections will outline the outcome research questions, which reflect an evaluation of the effectiveness of the intended intervention.

Teacher Practices

Evaluation of teachers augmenting their practices to increase learning coach involvement included analysis of the pretest and posttest of the modified Teachers Involving Parents (TIP) subscale of the teacher report of invitations to parental (learning coach) involvement (Hoover-Dempsey et al., 2002), posttest data from the teacher learning and outcome variables of the impact of teacher professional development (ITPD) scale (McChesney & Aldridge, 2018), and

focus group data. Descriptive statistics analyzed both the teacher report of invitations to learning coach involvement and the ITPD scales initially, followed by an independent t-test of the aggregate data from the pretest and posttest data of the teacher report of invitations of learning coaches survey.

Participants took the pretest in August, prior to the start of the intervention, and participated in the post test at the end of March of the following year at the conclusion of the intervention. The mean responses for each question of pretest and posttest data, as well as the averages, are depicted in Figure 5.2. Questions five and 15 reflect similar questions regarding telling learning coaches about what skills and activities students have been learning, supporting the visibly similar patterns of responses (see Appendices H and I for full pretest and posttest survey questions).

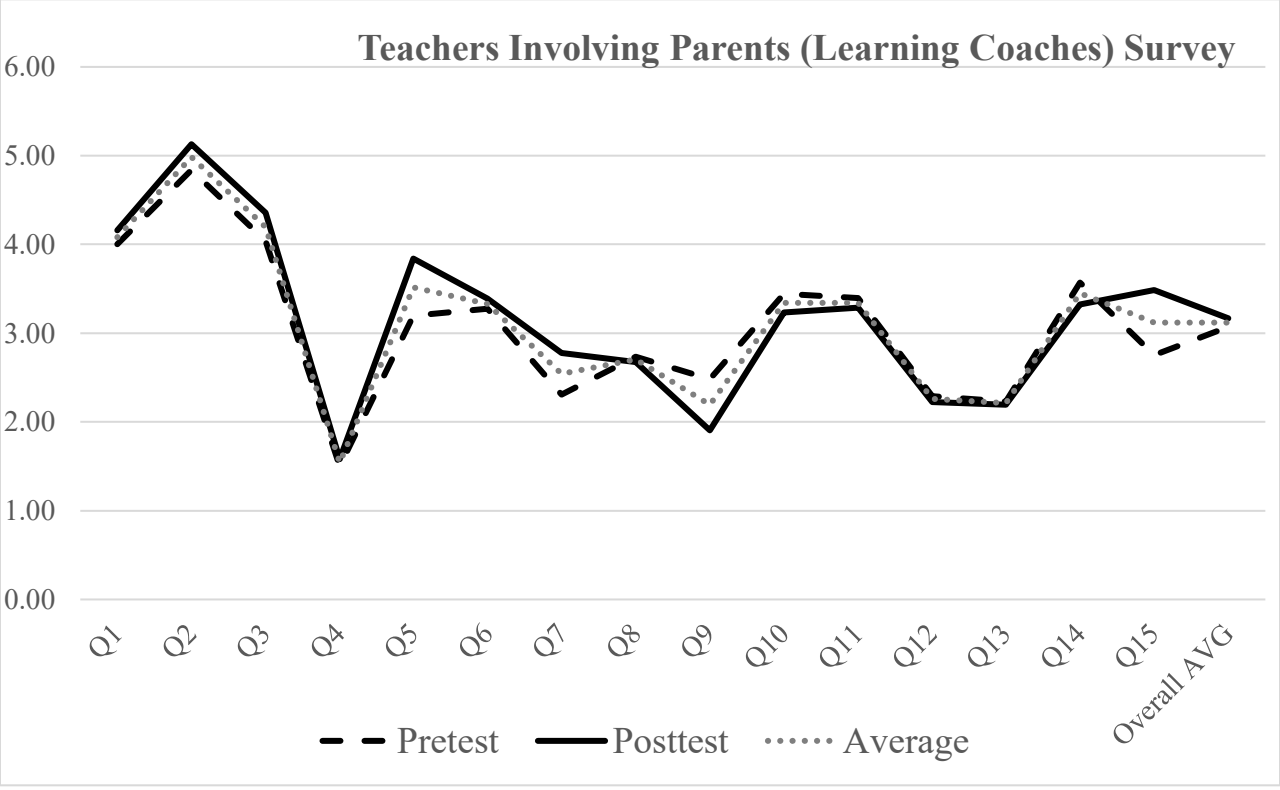

Figure 5.2. Graph of the pretest and posttest means.

In addition to the comparison of means pretest and posttest, an independent t-test compared the aggregate data of all questions within the subscale. The posttest mean (*M*= 3.17, *SD*= 0.95) was slightly higher than the mean for the pretest (*M*= 3.07, *SD*= 0.74), yet within the standard deviation for each. Further, the p-value (0.38) was higher than α (set to 0.05), indicating that there were no significant changes when comparing pretest and posttest data (see Table 5.1) below. This finding supported the initial observation from the graph of means that there were no differences in teachers' invitations to learning coaches as a result of the intervention.

Table 5.1 Independent T-Test Results

	Pretest	Posttest
Mean	3.07	3.17
Standard Deviation	0.74	0.95
Observations	15	15
Hypothesized Mean Difference		0.1
df		28
t Stat		0.30
P(T<=t) one-tail		0.38
t Critical one-tail		1.70
P(T<=t) two-tail		0.77
t Critical two-tail		2.05

When considering teachers' learning and outcomes as measured by the ITPD instrument, teachers often reported "neutral" responses (see Figure 5.3). The responses to the learning outcome questions indicated that 29% "agree," and 6% "strongly agree" that they know substantially more than they did before the PD, with 45% reporting "neutral." Further, when considering whether they have learned new things during the PD, 42% indicated "agree," 6% reported "strongly agree," while 35% indicated "neutral." Additionally, when considering the data from the previous research question regarding teacher response, it is important to recall that

at the mid-intervention data collection point 46% of teachers “agree” or “strongly agree” that the PD was beneficial, and another 54% “agree” or “strongly agree” that the PD was useful to their teaching practices. These findings revealed that while many responded neutrally at the conclusion of the intervention, a considerable number of teachers acknowledged knowing more and believing they learned something new as a result of the intervention.

When assessing the application of outcomes of the intervention according to the ITPD instrument, the pattern of teachers responding “neutral” was evident as well. When reviewing the first question regarding the application of what was learned to daily classroom practice, teacher responses were almost evenly divided between “neutral” (45%) and “agree” (42%) with an additional 3% responding “strongly agree.” When looking specifically at the successful application of the content of the PD in daily practice, the pattern of responses was similar, with 42% responding “neutral,” 45% “agree,” and 3% “strongly agree.” Although many teachers showed “neutral” responses to each of the questions individually, nearly as many teachers responded with “agree” or “strongly agree.” These findings suggest that while there were no differences in the teachers’ report of their frequency of extending invitations to learning coaches, many of the teachers acknowledge applying what was learned during the PD to their classroom practices with learning coaches.

The remaining questions from the ITPD scale evaluate the extent to which teachers believed the PD sessions improved student learning or benefited students. Again, a similar configuration of the data revealed most teachers responding “neutral” (48% for student learning improvements, and 52% for students benefiting from the teacher receiving the PD). However, there was less agreement with each of these criteria, with 26% responding “agree” to students’ learning improving as a result of the PD and 35% indicating “agree” with students benefiting

from the teacher participation in the PD. Both questions accounted no responses of "strongly agree." However, 16% "disagree", and 10% "strongly disagree" that student learning improved as a result of the PD, and 10% "disagree", and 3% "strongly disagree" that students benefited from teachers' participation in the PD. While neutral responses predominated this portion of the survey, teachers showed that there was a fair amount of agreement that they learned new things during the PD and applied their new knowledge in the classroom.

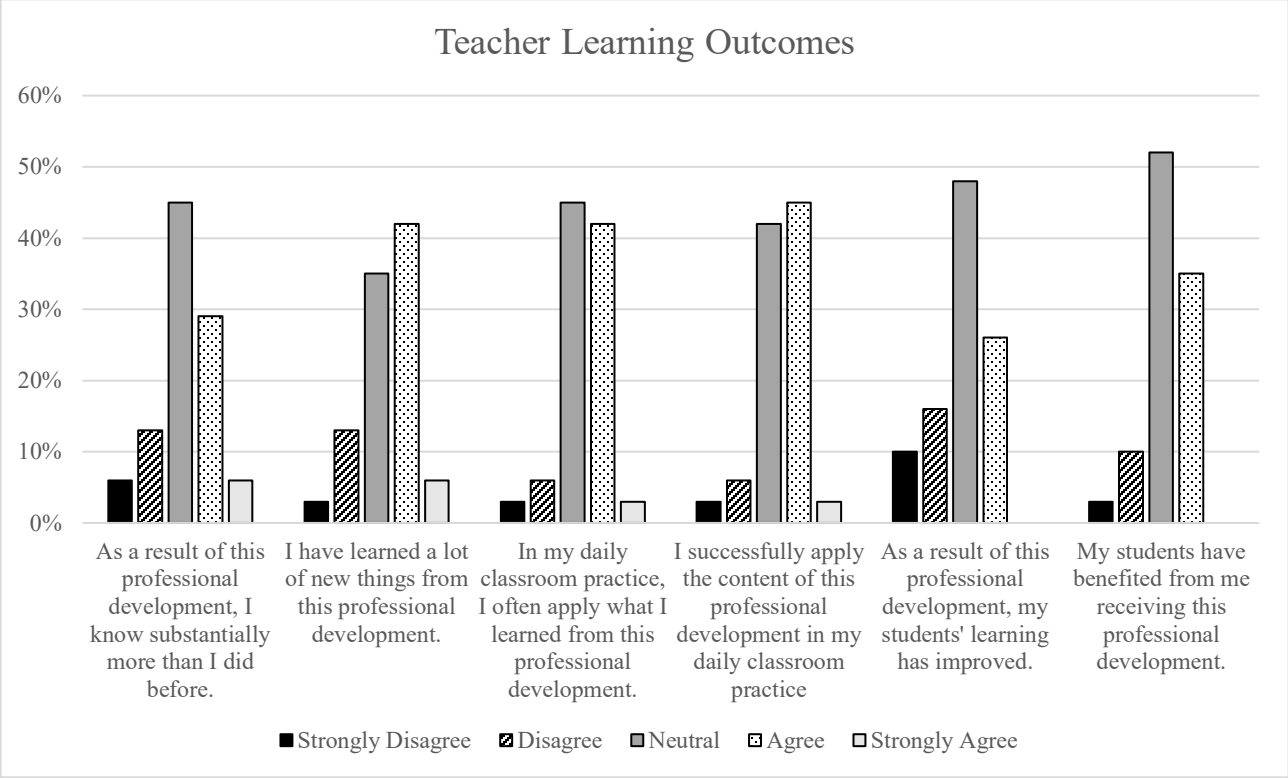

Figure 5.3. Graph of Teacher Reported Outcomes of Teacher Professional Development

When analyzing the qualitative data, codes emerged initially as exact words or phrases used by the participants or as common ideas expressed by participants. Continual refinement involved revising and redefining codes, and the creation of new codes. Codes were then categorized into themes, and quote excerpts to support the codes and themes were identified. (See Appendices M and N for codebooks.) The finding that teachers learned and applied new

knowledge within the classroom was further supported by data from the focus group in which all four teacher participants reported changes they made to their teaching practices and refinement of their strategies for involving learning coaches. In response to this research question, the focus group data revealed the codes of teaching shifts, new strategies, using technology, and maintaining efforts, as well as level of control, overwhelmed, keep trying, figuring out what works, and comparable to a brick and mortar school. These were then categorized into the two themes of refining practices (teaching shifts, new strategies, using technology, and maintaining efforts) and classroom experiences (level of control, overwhelmed, keep trying, figuring out what works, and comparable to a brick and mortar school). See Table 5.2 for the codes and themes from the focus group.

Table 5.2 Teacher Focus Group Code Book

Theme	Code
Building Community	Communicating frequently Increasing communications and interactions Real relationships Teacher Collaboration
Challenges in working with learning coaches	Absent learning coaches Sneaky Students Difficult learning coach interactions
Learning Coach Engagement	Active engagement Passive engagement Variable
Refining Practices	Teaching shifts New strategies Using technology Maintaining efforts
Classroom experiences	Level of control Overwhelmed Keep trying Figuring out what works Comparable to a brick and mortar school
Unexpected aspects of PD	PD Scheduling Different Direction for PD
Benefits of PD	Satisfaction Collaboration

When considering the theme of refining practices, one teacher noted changes in the operations of live sessions:

> And this year, I really have changed the way I've thought about [live sessions] and, instead of it being a class connect session for the student, now it's a class connect session for both. And I expect learning coaches to answer." (focus group, Teacher 4)

And another teacher indicated shifting classroom management approaches to include learning coaches more readily as well:

> I've changed a little bit my requirements and I'd say, 'Hey, if you're not logged in for at least 10 minutes of the actual class time or you have to be removed from the session, your learning coach is going to get a notice that you were MIA. (focus group, Teacher 1)

Finally, one teacher indicated changes in how she interacts with learning coaches as a result of the PD at the start of the school year:

> But you in our live November PD talked a lot about being able to form real relationships with our parents, so I've been working more on getting to know them and letting them get to know me. And that has kind of made all the difference. (focus group, Teacher 3)

The focus group data supported the finding that teachers were successfully able to augment their teaching practices as a result of participating in the intervention PD. Furthermore, focus group data reveal several new strategies that teachers attempted to increase learning coach involvement as well. Teacher 1 indicated, "We were brainstorming different things, and we decided on doing a gallery walk student showcase type thing with student work," and "Yeah, [Flipgrids] are new for me." Other teachers indicated, "We keep a Padlet going by team and by

class" (focus group, Teacher 3) and "it's almost like coaching for both the adult and the child" (focus group, Teacher 4). Finally, one teacher revealed using more of the resources such as an electronic record management system provided by the school to support learning coach involvement: "So, the intelligent agents…automatically send them an email… and it just gives them a reminder of different assignments they are missing….I did not use them last school year but using them this year…" (focus group, Teacher 2). Teachers in the focus group repeatedly indicated that they were taking steps to try new initiatives to increase learning coach involvement, which aligned with the researcher's observations during the virtual PLCs. Moreover, teachers seemed to be integrating and using technology to continue to refine their practices, which was appropriate given the context.

Further, it is essential to note that focus group data indicated that teachers might have had difficulty involving learning coaches as well, and that classroom experiences were trying at times for teachers. As previously mentioned, the codes level of control, overwhelmed, keep trying, figuring out what works, and comparable to a brick and mortar school outlined the theme of classroom experiences. One overwhelmed teacher commented,

> Oh, my gosh. How are we going to add something else on there? … the solutions to try and reach learning coaches were to reach them outside of school hours. And we also were like, "Oh. And we're already working as long as we can." (focus group, Teacher 1)

Teachers also noted feeling a lack of control in their ability to reach learning coaches, with one teacher stating, "I also think no matter what I do, if I work 24-hour-day cycles, I'm still not going to reach some of those LCs that are just checked out" (focus group, Teacher 2). Although some teachers in the focus group were overwhelmed and even felt a lack of control with regards to the extent to which learning coaches engaged, other teachers focused on figuring out what works.

Teachers persevered with engaging learning coaches: “Okay, I’m going to keep trying. I’m going to keep calling even if you hang up on me every time” (focus group, Teacher 1), which supported the findings that teachers were continuing to reach out and involve learning coaches.

Although there was some evidence of inconsistency across the quantitative and qualitative data in the extent to which teachers augmented their practices as a result of the intervention, the lived experiences of the teachers indicated that teachers actively made efforts to initiate new strategies to involve learning coaches. It is possible that this may reflect the teachers who were selected by the administration of the school to participate in the focus group. However, it is also possible that the teachers’ report of invitations to learning coaches did not accurately reflect the criteria necessary to teach within an online school.

Teachers and Learning Coaches Interactions

Addressing the changes in the interactions between teachers and learning coaches after teachers’ participation in the PD to increase learning coach involvement includes analysis of open-ended questions from both teachers and learning coaches and the focus group data from teachers. Quantitizing the qualitative data transforms the qualitative data into numeric data for statistical analysis (Onwuegbuzie & Leech, 2006; Teddlie & Tashakkori, 2003). Applying this data analysis approach determined that when asking learning coaches if interactions with teachers changed throughout the school year, 58% of learning coaches reported no changes, 18% identified changes, 6% indicated changes as a result of the COVID-19 pandemic, and 18% of responses did not directly answer the question. In-vivo and descriptive coding of the qualitative questions to learning coaches and teachers reflected similar responses, with the data from teachers indicating increases in communications and interactions and data from the learning

coaches noting positive changes and interactions. However, both sets of data also recognized challenges with interactions as well. See Table 5.3 for learning coach survey codes and themes.

Table 5.3 Learning Coach Survey Code Book

Theme	Code
Lack of changes	"Consistent" "Same"
Positive Changes	"Better"
Negative Changes	COVID-19/ corona virus Little to no interaction Decreases in communication
Inconsistent interactions	Variations in communication
Positive Interactions	Communication "Always" available Respond "quickly" Increased personal interactions Teacher Reponses
Lack of Teacher Support	No Support No Help
Methods of Communication	Email Phone Calls Additional methods
Supportive Interactions	Monitoring Student Progress Learning the System "Help" Questions Encourage Motivate "Fun" Tools and Strategies

Although in the open-ended questions asked of learning coaches some indicated no changes in their interactions with teachers, their responses suggested that they were already satisfied with the interactions with teachers (see Appendix N for full codebook). One learning coach exemplified this belief in the response, “No the teacher has always been available and quick to respond.” Or another learning coach stated, “No. I feel they are very easy to contact through email. I’ve always gotten responses from anyone I have reached out to.” Some learning coaches indicated positive changes as well, with one learning coach affirming, “If anything they’ve gotten better and easier as the year goes on. We know the teachers better and they know my child better. Interactions have always been respectful and helpful, geared towards my child’s success.” Unfortunately, the current COVID-19 pandemic has also impacted interactions between learning coaches and teachers, with several learning coaches indicated that “they don’t hold live classes but have office hours” during the current state-wide school closures.

When considering the code variations in communications the theme of inconsistent interactions emerged. Learning coaches indicated that some teachers communicate more often and more consistently than others, with one learning coach stating, “Some teachers have been much better at keeping up with communications than others” and another suggesting, “Here lately, some of the teachers still have a quick response time while others do not respond at all.” Further, the teachers who are interacting successfully seem to facilitate positive interactions as well, which surfaced as another theme.

The theme of positive interactions relied on the emergent codes of “always” available and respond “quickly,” as well as the descriptive codes of communication, increased personal interactions, and teacher responses. The code “always” available was highlighted in statements such as “they are always there to help,” and “the teachers are always there when I need them.” In

addition, respond "quickly" was outlined with statements such as, "the response time is usually very quick," and "staff are very dedicated and are quick to reply." When learning coaches were describing the code communication, they indicated, "much better communication," and "They have been great with calling and even a visit." When describing changes in the positive interactions, learning coaches outlined more individualized interactions, saying, "they have changed to a more personal level. I find it easier to talk to my child's teacher(s) and support staff." Further, the teachers' response code supported the theme of positive interactions, which was seemingly of value to learning coaches who indicated, "[teachers] have always been responsive and caring anytime I contacted them."

When learning coaches considered ways in which teachers helped them actively engage with their online students, the primary theme was supportive interactions. This theme was defined by the descriptive codes of monitoring student progress, learning the system, tools and strategies, as well as the in-vivo codes of help, questions, motivate, and fun. Learning coaches indicated that teachers monitor progress by, "let[ting] you know what your child is behind and how they could help to bring him back on track," as well as "keeping me aware of any missing assignments, giving me information on office hours." Teachers also helped parents learn how to use the online learning system and were "always willing to help." Learning coaches further indicated that teachers, "answered any and all questions we had," and were "just very encouraging to us." Furthermore, notable data included that teachers "motivate us" and "made it fun," while "provid[ing] ideas and tools for teaching strategies" and "g[iving] me a better understanding of the curriculum."

However, the data evidenced that learning coaches felt a lack of teacher support related to actively engaging with their online student. The lack of teacher support was outlined by the

codes of no support and no help. Learning coaches indicated, “current teacher has not initiated any activity to help be engaged with my student,” and “others still ignore what im (sic) trying to say we need help on.” One learning coach even stated, “I don’t think they did help.” Further, some learning coaches reported dissatisfaction with the interactions, with one learning coach responding, “I learned that the interaction with cyber school is not very personal and we are basically on our own.”

To further explore the interactions between teachers and learning coaches, data from the teacher focus group investigated this topic as well (see Appendix M for full codebook). Data analysis of the teacher focus group revealed the theme of building a community. This theme was defined by the codes of frequently communicating, increasing communications and interactions, building real relationships, and teacher collaboration. Specifically, several teachers indicated communicating weekly through a variety of methods, with one teacher reporting, “I’ve been working more on getting to know them and letting them get to know me. And that has kind of made all of the difference.” (Focus group, teacher 3). Further, three of the four teachers in the focus group indicated communicating regularly with learning coaches, stating, “we’re constantly in communication” (focus group, Teacher 4) or noting that, “personally, for me, [interactions] haven’t necessarily changed in tone but in frequency” (focus group, Teacher 3). Additionally, teachers indicated increases in communications and interactions: “I’ve talked to more learning coaches personally in the first half of this year than I did all of last year,” (focus group, Teacher 3) and “I think we are reaching them better this year compared to last year” (focus group, Teacher 2).

Perhaps the most telling code of the qualitative data from teachers, real relationships, outlined the changes in teachers’ practices that enhanced their interactions with learning coaches.

Two teachers from the focus group, demonstrated the development of "real relationships," with Teacher 1 saying, "two-way contact helps to actually build like a real relationship" and with regards to a specific learning coach, "we know what's going on in each other's lives at this point because we talk a lot." The other teacher noted, "I take notes now on personal things that parents have told us or kids have told us, like their favorite sport or their favorite music, to try to make it much more obvious that I know them" (focus group, Teacher 3). In the focus group, data revealed that teachers were individualizing their contacts with families, creating more personalized interactions, and refining their strategies at forming "real relationships."

However, teachers additionally noted several ongoing challenges when working and interacting with learning coaches. The codes that outline the theme of challenges in working with learning coaches included absent learning coaches, difficult learning coach interactions, sneaky students (see Appendix M for full codebook). With regards to the code of absent learning coaches, teachers expressly indicated that as students get older engaging learning coaches can become more complicated, "like I said, high school, a lot of time they're home by themselves during the day" (focus group, Teacher 1). However, elementary teachers noted difficulty in learning coaches being present as well,

> I teach first grade… they're expected to be with their kids the whole time. And, unfortunately, that is typically not what happens, which is sad, because a six or seven-year-old, they can't use a computer on their own. They need an adult there. (focus group, Teacher 4)

Keeping learning coaches in physical proximity to their online students seems pervasively challenging across grade levels in this online school that relies on the three-legged model for student support.

Teachers furthermore suggested that learning coaches can be difficult to work with at times, with one teacher stating, “Because it’s so easy to get emails from people who just seem like they’re attacking you…” (focus group, Teacher 1). And another teacher acknowledged, “I get really tired of yelling at learning coaches.” (focus group, Teacher 4). Additionally, difficulty in working with learning coaches can arise when learning coaches take their students word over the teachers: “I have a parent who no matter what I say or documents I show them about their student, they say I’m making it up, they are passing all their classes, because their child would not lie to them.” (focus group, Teacher 2). This was likely particularly relevant with regards to participating during synchronous session, with one teacher saying, “learning coaches just are taking the kid’s word for it sometimes about them attending” (focus group, Teacher 1). Finally, one teacher stated, “They’re crafty ones at the high school level. I have had some that tried to get around that by just logging in for like two minutes to the class, so that shows up on the report as attended” (focus group, Teacher 1).

In contrast, teachers were asked how learning coaches help teachers in supporting student learning. As a result of this being an open-ended question, teachers were able to provide multiple responses. There were nine distinct response categories outlined by teachers, which are outlined below. When quantitizing the qualitative data, calculating percentages from the total number of participants who responded to this question (23) occurred. Data regarding this question reports on the percentage of participants responding, as opposed to the number of responses, and as a result, the total percentage is greater than 100. When evaluating the data, most teachers (57%) responded that being aware of and supporting work completion was important. Further, 30% of participants described that they believed that collaborations were essential, 17% found learning coaches encouraging students helpful, and 13% suggested learning coaches helped them to

understand the student's home life. Other topics the teachers described noted in smaller percentages included advocating (9%), understanding problems and struggles (9%), understanding motivations and goals (4%), understanding student needs (4%), and checking grades (4%).

These findings aligned with the findings from open-ended questions asked of learning coaches that most learning coaches (90%) found teachers receptive to their reaching out. Responses from learning coaches included "very receptive," "extremely receptive," and "responds immediately." Further, learning coaches reported on when they reach out to teachers, with 48% indicating they reached out when they had questions or needed help and 15% reaching out for support or when there was an issue (see Table 5.4 below). A few learning coaches noted only reaching out to teachers when a teacher-initiated contact or solicited their input. This result was notable as it aligned with previous research that suggested that parents often look to teachers for guidance on how to work with students (Baker et al., 2016) and further underscores the importance of teachers soliciting learning coach involvement.

Table 5.4 When Learning Coaches Reach Out to Teachers

Learning Coach Responses	Number of Responses	Percentages
Questions or need help	145	36%
Support, as needed, or when there are issues or problems	44	11%
Attendance issues	37	9%
Checking grades	33	8%
Technical difficulties	26	6%
The response was not relevant to the question	23	6%
Missing work or work completion	22	5%
No need to reach out	22	5%
Student discouraged or not working	13	3%
Testing- either class or state	13	3%
IEP meeting, IEP needs, Parent-Teacher Conference	12	3%
Miscellaneous (including schedule issues, extra credit, medical issues, etc.)	11	3%
Teacher initiates contact	8	2%
Total	408	100%

The data also revealed the theme of methods of communications, which outlined several means of communication that primarily focused on email and phone calls. This result aligned with the data from open-ended questions of the teachers, which when quantitized indicated that when teachers invite learning coaches to be involved, they use email 22% of the time, phone calls 17%, 10% newsletters, and a variety of other methods including Zoom, videos, learning coach help sessions, live classes, homework, by special invitation, IEP meetings, field trips, website, the family of the week, Padlets, and checking the grades for the student (see figure 5.4 below).

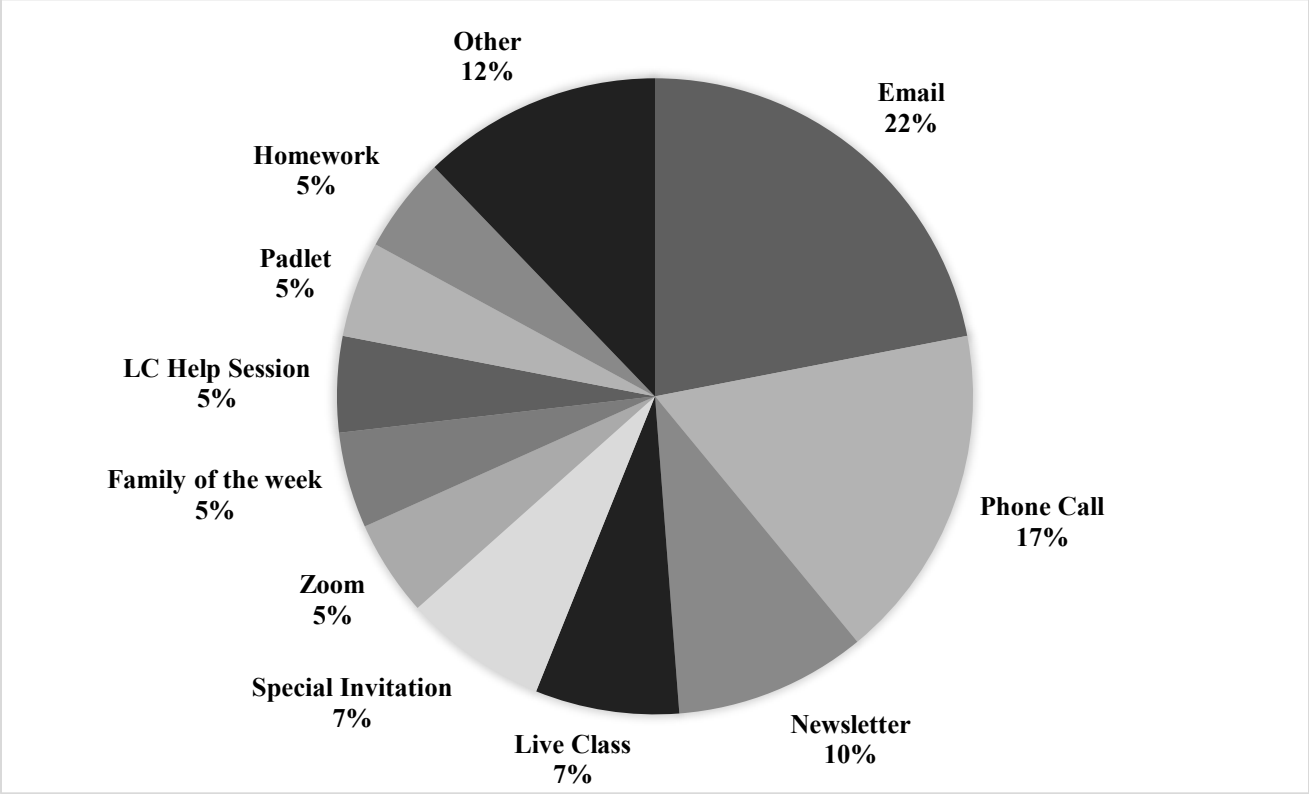

Figure 5.4 Method of Communications as Reported by Teachers

Of the learning coaches who found teachers helpful in supporting them in actively engaging with their students, a common response was that they felt that teachers were responsive

to their questions. One learning coach said, “Any time I have a question they are very helpful,” while another stated, “She has helped us through every problem we have ever had.” Learning coaches also found teachers encouraging, indicating, “My son’s teacher is very encouraging,” and “She always cheered my daughter on.” One learning coach suggested that the teacher “made me part of the learning as well,” which aligned with the efforts of one teacher in the focus group who indicated,

> And this year, I really have changed the way I've thought about [synchronous instructional sessions] and, instead of it being a class connect session for the student, now it's a class connect session for both. And I expect learning coaches to answer. (focus group, Teacher 4)

These data suggested that there were changes in the interactions between teachers and learning coaches throughout the school year.

When considering changes in interactions between teachers and learning coaches, it is also important to note that focus group data supported learning coach engagement as a theme defined by the codes of active engagement, passive engagement, and variable engagement. Described in terms of soliciting participation in school events, active engagement included one teacher noting, “we have parent-teacher conferences this week, and I have 37 out of 40 learning coaches who have attended, which was a huge amount compared to last year.” (focus group, Teacher 4). Additionally, passive engagement described ways for learning coaches to be involved that may not be readily apparent, “Whether it’s the newsletters, the Flipgrid, I think they’re at least seeing it. They might not give us feedback on it very often.” (focus group, Teacher 2). Ultimately, however, teachers found that some learning coaches were more engaged and

involved than others, including the variable engagement of learning coaches, “that are sometimes engaged, sometimes not” (focus group, Teacher 2).

When considering the data available for this research question in totality, changes in interactions between teachers and learning coaches were apparent. While many learning coaches answered “No” to there being changes in their interactions with teachers when they elaborated further in their response, it was evident that they were satisfied with the level of interactions. When considering some of the methods of communication tried, teachers approached learning coaches in new ways this year. Each teacher who was a part of the school was provided with a Zoom account this year for the first time, as well as initiating sending Flipgrid videos, which were notable as new efforts to increase learning coach involvement. Furthermore, data from all four teachers in the focus group reflected changes in how they were fostering and building a community through their interactions with learning coaches. Consequently, the findings related to this research question indicated overall interactions between teachers and learning coaches have changed as a result of the intervention.

The intervention was fundamentally implemented as planned, and consequently accurately evaluated the outcomes as intended. While the quantitative findings regarding changes in teachers’ practices suggested that there were no significant changes as a result of the PD, the qualitative data from the teachers’ focus group suggest that teachers were focusing on the initiative to increase learning coach involvement within their online classrooms. Perhaps most importantly, teachers were refining and improving their strategies to involve learning coaches as a result of and during the PD sessions. Qualitative data from learning coaches noted positive interactions and a variety of methods of communications when interacting with teachers. Further, while some learning coaches acknowledged inconsistent interactions and communications or a

lack of teacher support, others noted supportive and positive interactions that supported both learning coaches and students alike. Extending the duration of this study to include more opportunities for teachers to explore new strategies for involving learning coaches and continuing to refine their successful efforts might provide greater insight into how best to increase learning coach involvement in elementary and secondary online classrooms. The next section will outline the strengths and limitations of the intervention.

Strengths and Limitations of the Research Design

The outcome evaluation measured changes in teachers' practices after participating in PD sessions to increase learning coach involvement and changes in teacher-learning coach interactions. Integrating both quantitative and qualitative data enabled the study to draw from the strengths of both methods and minimize potential weaknesses of the use of either individual method alone (Johnson & Onwuegbuzie, 2004) while improving the researcher's ability to answer research questions (Teddlie & Tashakkori, 2003). Further, the convergent parallel design was a logical approach to mixed methods (Creswell & Plano Clark, 2018).

There were several strengths of utilizing the quasi-experimental one-group pretest-posttest convergent-parallel mixed-methods design, including: the delivery of the intervention to all teachers in the school; the efficiency of collecting both quantitative and qualitative data from questionnaires and a focus group; and the ability to analyze the data strands independently utilizing techniques typically associated with each given method (Creswell & Plano Clark, 2018); as well as quantitizing the qualitative data to provide statistical analysis of qualitative findings (Onwuegbuzie & Leech, 2006; Teddlie & Tashakkori, 2003). Furthermore, designing the study to include all teachers in the school ensured that strategies and techniques for increasing learning coach involvement were available to all teachers, which provided support for

all learning coaches and students. The design of this study emphasized quantitative data collection, with qualitative data offering insight into the results of the quantitative measures. Measuring the differences in scores on the teachers' report of invitations to learning coaches survey through a comparative analysis of pretest and posttest data presented insight into potential changes in the teachers' practices.

Although the outcome evaluation design was sound and had several strengths, it is necessary to consider the limitations. Establishing a relationship between teachers' participation in PD sessions and the changes that occurred after the intervention may have been difficult as there were several threats to the internal validity of the investigation. The most significant threat to the internal validity of this investigation was that the school established increasing learning coach involvement as a focal priority for this school year. Consequently, in addition to the PD regarding increasing learning coach involvement provided to teachers, the school promoted several other initiatives to increase learning coach involvement. These initiatives included, but were not limited to, hiring a learning coach liaison, requiring teachers and the school to host monthly face-to-face events with families across the state, getting live video Zoom accounts for each teacher, the learning coach liaison and administration of the school scheduling virtual town hall meetings for learning coaches to offer support and opportunities to connect, establishing a team of learning coach mentors or experts for new learning coaches to find support and be able to ask questions during the onboarding process and beyond, and increasing the social media presence of the school specifically for learning coaches. These initiatives made it difficult to ascertain whether changes in teacher practices resulted only from the PD provided or the overall focus of the school for the year.

Further, returning teaching staff received the previous PD on increasing learning coach involvement the prior spring, which included underscoring the importance of learning coach involvement and provided teachers with specific strategies for increasing involvement. This pre-intervention exposure to learning coach involvement may actually promote maturation in the teachers' practices (Shadish et al., 2002). Consequently, it was difficult to ascertain with confidence what changes resulted from the PD delivered during the intervention.

Another testing threat that is important to note is that the school surveyed both teachers and learning coaches throughout the school year. The learning coaches were surveyed seven times throughout the school year. Although the response rate for the first survey was approximately 35%, by the fourth survey, the response rate was approximately ten percent (Executive Director, personal communications, January 28th, 2020). Surveys of teachers occur regularly as well. However, because surveys of teachers come from several sources, including the school, individual principals, and other administrators, it was difficult to get a clear understanding of how many surveys teachers participated in throughout the year or the response rates. However, the repeated surveying throughout the school year may have had an impact on the willingness to participate in the intervention surveys as teachers and learning coaches may have been tired of completing surveys for the school.

The relatively constant attrition and new enrollment of students and learning coaches throughout the school year was another threat to internal validity. Cyber charter schools tend to have high attrition rates of their student populations with an average length of enrollment approximately two years (Gill et al., 2015). The context in this investigation demonstrated a more than 37% attrition rate of their student population in their second and third years of operations (personal communications, March 18, 2019, February 25, 2020). Although attrition

from the intervention was not a significant concern for the researcher, attrition from school may influence the reports from the learning coaches regarding changes in teacher practices throughout the school year. Further, several learning coach responses indicated that they were new to the school and could not consider changes that occurred throughout the school year. As the survey was sent to learning coaches repeatedly, there were slight increases to the number of learning coaches with each subsequent administration of the instrument, suggesting that even families who had just enrolled in the school received the email and survey.

Several other limitations exist within the sampling and delivery of the surveys and the focus group. In particular, the pretest survey was sent to teachers by the PD coordinator. The link was sent to all employees at the school, including the administration, support staff, and employees of the sponsoring for-profit organization, which resulted in some participants not being teachers. Further, initial efforts to solicit volunteers to participate in the focus group were not fruitful. Consequently, sampling for the focus group was dependent upon the school administrators who helped to find people who would volunteer to participate. However, as noted in the initial face-to-face PD sessions, when the PD coordinator selected the learning coach panel, she only selected learning coaches who were happy with their experiences with the school. As a result, it is unknown the extent to which the focus group participants were an accurate reflection of the rest of the teachers in the school or whether they were selected to reflect a positive school environment. It is possible that the administrators again selected teacher participants who were being successful in increasing learning coach involvement and having a positive experience with the PD to increase learning coach involvement.

Additionally, the teacher response survey and the focus group data for the second research question were collected mid-intervention. The decision to collect data on teacher

response mid-intervention was intended to allow the researcher to analyze early data to modify the remainder of the intervention in reaction to the results. The response from the mid-intervention survey and focus group confirmed the original plan for the rest of the intervention.

Finally, it is essential to consider the school culture and norms and the impact this may have had on the intervention. While the face-to-face sessions were well attended, during two out of the three session days, the researcher was asked to end sessions early. Further, during the virtual PLC sessions, teachers would often not attend, show up significantly late, or leave significantly early. The online reporting system that the school maintains for determining teachers' participation in online PD simply tracks if a teacher has logged in, and does not account for how long they are in the session, whether they show up late, walk away from their computer, or work on other tasks during the synchronous session. This problem echoes the same issue that teachers face with students within their online courses and seems to be a pervasive problem with the online learning system in use at the school. Consequently, it was difficult to ascertain if teachers received an appropriate dose, which could impact the knowledge gained about the ultimate effectiveness of the intervention.

Additionally, concerning cultural norms within the school, there was ongoing difficulty with soliciting participation and support. Often there was no response to emails sent to the principals and other administrators. Further, while some principals were very supportive and helped engage their division of teachers, others did not attend the virtual PLC sessions. Inherently the cultural norms and standards set both by the school and by the principals likely impacted teachers' participation, engagement, and perception of the PD.

The researcher's relationship with the school should be acknowledged as well. The researcher served as the Treasurer and Secretary of the Board of Trustees and was removed from

daily school operations for the duration of this study. To mitigate any potential influence or power dynamics that could have resulted from the researcher's board position, recruitment materials and pretest and posttest surveys were distributed to teachers by the PD coordinator. An administrative assistant distributed surveys to learning coach participants. The researcher, however, delivered the PD sessions to teaching staff directly and aimed to build sufficient rapport with teachers during that time so that focus groups would not be compromised. However, it was unknown the extent to which the positionality of the researcher influenced the intervention or data collection processes. The next section will outline further implications for practice.

Implications for Practice

During the current COVID-19 pandemic, school closures have dictated students must learn remotely from the safety of their homes. Many schools are uncertain of how the next school year will begin, with contingency plans including the possibility of online learning continuing for all students. While many brick and mortar teachers are struggling to figure out models for engaging students, the teachers in this online school have a great deal to offer in the conversation of how best to transition to online learning. Many traditional brick and mortar school teachers who find themselves teaching online may not yet be aware of the critical role that parents and family involvement play in online classrooms. This research underscores the value of bringing together parents and learning coaches as partners. Now more than ever, it is essential to determine ways for teachers to engage and involve parents and others in supporting students to be successful learners.

While family involvement has been conceptualized historically within brick and mortar schools, it is essential to rethink how to communicate and involve these learning coaches within online classrooms. While the framework provided by Epstein et al. (2019) outlines six domains

for increasing family involvement, modifications are necessary for implementing these within the online classroom. From this investigation, the most relevant types of involvement in an online classroom included communicating with parental learning coaches through various mediums, supporting families in helping students, and increasing shared decision making. Teachers need to continue to build on these three key types of involvement when working with students and families in online classrooms.

Teachers from this investigation found that using several different methods of communication was helpful to build a strong relationship and that the frequency of interactions they initiated were important considerations when trying to connect meaningfully with learning coaches. Teachers noted that they often did not get responses from learning coaches when they sent emails, “I had sent them [emails] many, many times” (focus group, Teacher 1). Yet, they reported positive responses to several new technology-supported initiatives to increase communications with learning coaches and solicit higher levels of involvement. These new initiatives included a class Padlet and Flipgrid videos, both of which teachers felt were manageable and more engaging for families. Teachers in this investigation began this process but recognize that continuing these efforts as technologies evolve will be essential.

In addition, teachers found that changing the way they consider the role of learning coach involvement during the synchronous session impacted the level of active participation as well. They crafted live sessions that included active participation from learning coaches to increase student success as well as providing regular opportunities for passive engagement, such as newsletters. Further, learning coaches noted the importance of teachers being available and responsive to their reaching out with questions or needing help. Learning coaches seemed to

particularly appreciate when teachers monitored their student's progress and communicated when students fell behind, which are important aspects for online educators to consider.

Perhaps the most significant findings in this investigation that have implications for practice were the importance of individualizing interactions and forming real relationships. In a school mediated by technology and subject to the difficulties presented by learning while physically distant, forming personal connections can be a challenging yet essential component to success. Data from teachers indicated that their efforts to build a community depended both upon their interactions with students and learning coaches, as well as their opportunities for collegial collaboration with other teachers. Learning coaches indicated that positive interactions included teachers' making personal connections, being available, and being responsive. Teachers likely need to be flexible in both the technology they use and their interactions with learning coaches to ensure that they are providing positive interactions and support.

Additionally, there are several implications for parents and families. Families need to recognize the role they have in ensuring student success while students are learning online. While parental involvement is important in a traditional brick and mortar school, and the implications become increasingly critical with students learning from home. Teachers reported frustration that some learning coaches took their child's word regarding work completion, which was, at times, deceiving. It is essential for parents and learning coaches to value and rely on the three-legged model for student success and to see their child's teacher as a resource and support. Teachers and learning coaches need to continue to collaborate and build the foundational team for student learning. These implications are necessary elements to consider for parents and families, as well as online educators and educators who find themselves teaching online, during the COVID-19 pandemic.

Future Research

When considering the findings, there are several opportunities for future research and practice. First, teachers reported several new methods for approaching learning coaches within the online classroom, including several new technologically supported methods and applications. Utilizing these new approaches to adapt further the Teachers Involving Parents (TIP) scale (Hoover-Dempsey et al., 2002), specifically the teachers' report of invitations to learning coaches, might make the subscale more relevant to the online context. Additionally, either extending the length of the PD or ensuring consistent participation of all teachers might support finding significant differences in the result of the teachers' report of invitations of learning coaches as well. Further exploration of the pattern of changes in the questions reporting on the frequency of communicating with learning coaches regarding students' skill development and what students have been learning (questions five and 15) in the teachers' report of invitations of learning coaches is warranted as well. Both questions relate to sharing information with learning coaches regarding student activities and learning, and many of the teachers in the school noted sending out newsletters, regular emails, or maintaining frequent communications. While the pattern did not reflect significant changes as a result of the intervention, these questions revealed notable patterns of differences between the pretest and posttest that indicate there might be more discernable changes when investigated with a larger sample size or for a longer duration.

Additional research should also include consideration of the division-specific differences in how learning coaches relate to their students and teachers. While teachers repeatedly noted differences in elementary school as opposed to middle or high school, the intervention was primarily the same for all divisions of the school. Further, the surveys were not differentiated for the different divisions of the school, and as a result, the data collection reflected more generally

applicable considerations. However, this desire to tailor by grade level or school division needs to be balanced with the teachers' experiences of being overwhelmed and lacking a sense of efficacy in their ability to involve learning coaches.

Finally, several research questions noted inconsistent results across quantitative and qualitative data that necessitates further exploration. The third research question noted no changes in teacher practices in the quantitative data, yet the lived experiences of the teachers captured during the focus group sessions outlined clear examples of their refining their efforts to involve learning coaches. Further, in research question four, the qualitative data from both teachers and learning coaches indicated that there were both positive changes and challenges to the interactions between teachers and learning coaches. Larger sample sizes might influence future results, as well as holding several focus groups with participants to more accurately understand the breadth and depth of their experiences. Further, the focus on increasing learning coach involvement throughout the school made it difficult to ascertain the extent to which teacher experiences were a result of the PD as opposed to the school-wide initiative. Additional exploration of the intervention PD focused on increasing learning coach involvement independent of the school's mission would further clarify the effectiveness of focusing on developing teacher practices for increasing learning coach involvement.

Conclusion

While cyber charter schools are still a new enterprise in the field of education, they have been figuring out virtual learning strategies for approximately 25 years. Developing practices that involve parents or learning coaches is an essential component of success. Within this school, there is progress: "And so far, we've maintained better passing rates all year than we had last year. So, I think that that's definitely a positive change we've seen" (focus group, Teacher 1).

Continuing to progress through the process of figuring out what is effective in involving learning coaches and increasing student engagement is relevant and timely as more students are learning remotely during the COVID-19 pandemic. This intervention study adds to a growing body of research on effective practices and offers insight into how teachers can solicit active and passive engagement of learning coaches in an effort to support student success.

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Appendix A

A Survey of Teacher Perceptions of Online Student Engagement

Q1 Thank you for your participation. This survey will take approximately 10-15 minutes to complete.
By completing this survey or questionnaire, you are consenting to be in this research study. Your participation is voluntary and you can stop at any time.

- Agree (1)
- Disagree (2)

Q2 The first section of questions asks you about your professional development and training related to online instruction. Professional development and training can include both structured (e.g., graduate courses, workshops) and unstructured (e.g., mentoring, online forums, internet searches) professional learning activities aimed at increasing your capabilities in K-12 online instruction. Please consider all in-service professional development related to K-12 online instruction that you received while teaching (face-to-face or online) and pre-service teacher

training programs, which includes both your education to become a teacher and your student teaching experience.

Have you ever participated in any structured or unstructured professional development or training specifically focused on online instruction?

- Yes (1)
- No (2)

Q3 When you started working at your current school, how much training was provided to you on online teaching before you started teaching?

- less than 1 day (1)
- 1 day (2)
- 2 days (3)
- 3-5 days (4)
- more than a week (5)

Q4 Since the start of this school year how many hours of professional development and training have you participated in?

- none (1)
- 1-2 hours (2)
- 3-5 hours (3)
- 6-10 hours (4)
- 11-20 hours (5)
- 20-40 hours (6)
- 41+ hours (7)

Q5 When did your most recent unstructured (mentoring, online forum) professional development or training in online instruction occur?

- never (11)
- within the past week (1)
- within the past 2-3 weeks (2)
- within the past 1-3 months (7)
- within the past 4-6 months (8)
- within the past 7-12 months (9)
- more than a year ago (10)

Q6 When did your most recent structured (courses, workshops) professional development or training in online instruction occur?

- never (7)
- within the past week (1)
- within the past 2-3 weeks (2)
- within the past 1-3 months (3)
- within the past 4-6 months (4)
- within the past 7-12 months (5)
- more than a year ago (6)

Q7 Approximately how many total hours of professional development and training have you participated in that focused on online instruction? Please consider both structured (courses, workshops) and unstructured (mentoring, online forums) professional development

	1-2 hours (1)	3-5 hours (2)	6-10 hours (3)	11-20 hours (4)	21-40 hours (5)	41+ hours (6)	N/A (7)
(1) During pre-service education, including your education to become a teacher and student teaching experience							
(2) Prior to teaching online but after your pre-service education and student teaching experience							
(3) While teaching online							

Q8 What was the format of the professional development and/ or training that you participated in that focused on online instruction? Please select all that apply.

- limited/ one-time session (1)
- multi-day workshop or conference (2)
- ongoing training sessions (3)
- post-secondary course/ certificate (4)
- professional learning community (5)
- peer coaching/ mentoring (6)
- observation of a colleague (7)
- independent review of online discussion forums, websites or blogs (8)
- participation in an online course (9)
- administrator support (10)
- advice from a colleague (11)
- other (12) _____

Q9 Of all the professional development and/or training opportunities in online instruction that you have had, have you participated in online, face-to-face or blended learning? Please select all that apply.

- fully online, facilitated (1)
- fully online, non-facilitated (i.e., self-paced) (2)
- fully face-to-face (3)
- blended (i.e., combination of face-to-face and online((4)

Q10 Have you participated in professional development and/or training in any of the following areas related to online instruction?

	Yes (1)	No (2)
technology (1)		
facilitation (2)		
online course development (3)		
online course customization (4)		
assessment and data use (5)		
students with special needs (6)		
classroom management (7)		
leadership (10)		
digital etiquette (8)		
professional practice (9)		

Q11 Please indicate whether you agree or disagree with each of the following statements.

	Disagree (5)	Somewhat Disagree (4)	Neither Agree nor Disagree (3)	Somewhat Agree (2)	Agree (1)
The professional development and/ or training in which I have participated prepared me to teach online. (1)					
I am satisfied with the professional development and/or training to teach online in which I have participated. (2)					
I would benefit from additional professional development or training in online instruction. (3)					

Q12 To what extent do you encounter the following challenges related to your online instruction?

	To a great extent (1)	To some extent (2)	Not at all (3)	Not applicable (4)
navigating the technology (1)				
using multiple forms of media in my courses (2)				
using collaborative tools (3)				
helping students with technology use in class (4)				
keeping up with changing technology (5)				
interacting with students (6)				
keeping up with students' communications (7)				
getting students to interact with each other (8)				
engaging students' parents/ guardians (9)				
developing content for online courses (10)				
supplementing content for online courses (11)				
assessing students in an online setting (12)				
using student data to modify my instructional methods (13)				
other challenges, specify below (14)				

Q13 Specify other challenges.

_____

Q14 To what extent do you encounter the following challenges related to your online instruction?
(1) to a great extent
(2) to some extent
(3) not at all
(4) not applicable

	(1)	(2)	(3)	(4)
managing my online classroom (1)				
setting course expectations (2)				
helping students take responsibility for their learning (3)				
keeping students engaged throughout the course (4)				
getting students to complete the course (5)				
getting students to complete assignments (6)				
supporting students with special needs (7)				
ensuring students use technology responsibly (8)				
feeling isolated from colleagues (9)				
managing my time (10)				
balancing my workload (11)				
other challenges, specify below (12)				

Q15 Specify other challenges

_____

Q16 What type of professional development or training do you think would best help you address the challenges that you face in online instruction? Please select all that apply.
(1) structured professional development (e.g., courses, workshops)
(2) unstructured professional development (e.g., mentoring, online forum or search)
(3) no professional development necessary

	(1)	(2)	(3)
navigating technology (1)			
using multiple forms of media in my courses (2)			
using collaborative tools (3)			
helping students with technology (4)			
keeping up with changing technology (5)			
interacting with students (6)			
keeping up with students' communications (7)			
getting students to interact with each other (8)			
engaging students' parents (9)			
developing content for online courses (10)			
customizing content for online courses (11)			
supplementing content for online courses (12)			
assessing students in an online setting (13)			
using data to modify my instructional methods (14)			
managing my online classroom (15)			
setting course expectations (16)			
helping students take responsibility for their work (17)			
keeping students engaged throughout the course (18)			
getting students to complete the course (19)			
getting students to complete assignments (20)			
supporting students with special needs (21)			
ensuring students use technology responsibly (22)			
feeling isolated from colleagues (23)			
managing my time (24)			
balancing my workload (25)			
other, please list below (26)			

Q17 Please specify "other" from previous question.

Q18 For each of the following online instructional practice areas, when do you think online teachers should receive professional development or training? Please select all that apply

	during pre-service education, which includes your education in teaching and y our student teaching experience (1)	prior to teaching online, but after pre-service education and student teaching (2)	while teaching online (3)
technology (1)			
facilitation (2)			
online course development (3)			
online course customization (4)			
assessment and data use (5)			
students with special needs (6)			
classroom management (7)			
leadership (10)			
digital etiquette (8)			
professional practice (9)			

Q19 The next section of questions asks about your background experience with teaching online. Did you teach in a traditional face-to face classroom prior to teaching online?

- Yes (1)
- No (2)

Q20 How many years have you taught online? Please enter only numbers.

_____

Q21 What grade levels have you taught online? Please select all that apply.

- Elementary school courses (K-5) (1)
- Middle school courses (6-8) (2)
- High school courses (9-12) (3)
- Post-Secondary (4)

Q22 What subject areas have you taught online? Please select all that apply.

- Mathematics (1)
- Science (2)
- English/ Language Arts (3)
- History/ Social Studies (4)
- Vocational/ Technical (5)
- World Languages (6)
- Health/ Physical Education (7)
- Fine Arts (8)
- Other (9) _____

Q23 What types of courses have you taught online? Please select all that apply.

- required core courses (not for credit recovery) (1)
- advanced placement (AP) courses (2)
- credit recovery courses (3)
- dual credit/ college courses (4)
- elective courses (for core, not AP and not dual credit/college courses) (5)
- other types of course, please specify (6)
  _____

Q24 How much time do you spend per week planning and preparing for synchronous class time?

- none (1)
- 1-5 hours (2)
- 6-10 hours (3)
- 11-15 hours (4)
- 16-20 hours (5)
- 20+ hours (6)

Q44 This next section of questions is about your background.
What is the highest level of education you have completed?

- Bachelor's degree (1)
- Master's degree (2)
- Doctoral degree (3)
- Trade or vocational training (4)
- Other (5)

Q45 What is your age?

- 20-29 (1)
- 30-34 (2)

- 35-39 (3)
- 40-44 (4)
- 45-49 (5)
- 50-54 (6)
- 55-59 (7)
- over 60 (8)

Q46 What gender do you identify most with?

- Male (1)
- Female (2)
- I would prefer not to answer (3)

Q47 What would describe you best?

- Black/ African American (1)
- Asian/ Pacific Islander (2)
- Native American (3)
- Hispanic/ Latino (4)
- White (5)
- Other (6)

Q25 This next section is focused on student engagement.
Please select the answer that most accurately reflects your perception of the majority of your students. Select one for each criteria.
(1) not at all characteristic of most of my students
(2) not really characteristic of most of my students
(3) moderately characteristic of most of my students
(4) characteristic of most of my students
(5) very characteristic of most of my students
(6) Not applicable or unknown

	(1)	(2)	(3)	(4)	(5)	(6)
My students: make sure to study outside of class time on a regular basis (1)						
put forth effort (2)						
stay up on the readings (3)						
look over class notes before getting online to make sure they understand the material (4)						
are well organized (5)						
take good notes over readings, PowerPoints or video lectures (6)						
listen/ read carefully (7)						
find ways to make the course material relevant to their lives (8)						
find ways to make the course interesting for themselves (10)						
really desire to learn the material (11)						
have fun in online chats, discussions, or via email with me, as their instructor, or other students (12)						
participate actively in small-group discussion forums beyond the baseline requirements (13)						
help fellow students (14)						
earn a grade the student feels reflects their work effort (15)						
show proficiency on tests/quizzes (16)						
engage in conversation with me as their teacher (chats, discussions, emails) (17)						

Q26 This section focuses on interactions within the classroom.
To what extent do you build classroom structures that facilitate interactions?

- Interactions are not encouraged; no activities require interactions (1)
- Brief introductions and occasional opportunities for sharing personal exchanges provided (2)
- regular exchanges and social interactions are encouraged between student-student and students-teacher (3)
- course design promotes social interaction between student-student and student-teacher (4)

Q27 To what extent is instruction designed to promote interaction?

- instructional activities do not require two- way interactions (1)
- instructional activities require students to interact with teachers on an individual basis only (2)
- in addition to communicating with the instructor, instructional activities require students to communicate with each other (discussion in pairs or small groups) (3)
- in addition to communicating with the instructor, instructional activities require students to develop products together by working cooperatively (4)
- in addition to communicating with the instructor, instructional activities require students to develop products together by working cooperatively and sharing results and feedback with others in the class (5)

Q28 To what extent does the technology used promote interaction? Please select all that apply.

- technology used reliably allows for asynchronous exchanges of information (1)
- technology used reliably allows for synchronous exchanges of information (2)
- technology used reliably allows for live audio communications (3)
- technology used reliably allows for live video communications (4)

Q29 What are the most effective strategies you use to facilitate different types of student interactions? (between students, between students and you as their teacher, between students and the content they are learning, and between students and the online system they are learning through)

_____

Q30 Do you think that students experience a sense of community within the classroom? How can you tell? _____

Q31 What aspects of teaching online do you find most challenging?

_____

Q32 Describe your greatest success in your online teaching experience?

_____

Q33 Would you be interested in participating in a follow up interview or focus group to discuss your responses to this survey? If so, please include your name and contact information below.

_____

Appendix B

Needs Assessment Interview and Focus Group Schedules

Interview Schedule: K-12 Online Student Engagement

1. Establish rapport and establish the intent of the interview
    a. Gather information about the factors that inform low levels of student engagement in online learning
    b. Participation is voluntary
    c. No compensation is offered for participation
    d. Expected time frame: 30 min
2. Questions for Interview Participant: Student Services Coordinator
    a. How does the school define student disengagement?
    b. How does the school identify when students become disengaged? Are there different ways to recognize student disengagement? Is there a threshold that students must reach before their low level of engagement is considered problematic?
    c. What steps does the school take they identify a student as having a low level of engagement? (how long does this process usually take?) Who is involved in the process?
    d. Has this referral process been effective this school year at getting students back on track?
    e. When a student referral occurs for low engagement, what is the most common outcome?

f. Once a student has gone through the process to become re-engaged again are they at a higher risk of becoming dis-engaged again? Or do they have a better understanding of the requirements asked of them, and they are better able to engage moving forward?
g. What happens if the team is unable to get the student to re-engage?
h. Do you have any sense of why some students become disengaged? What are the most common reasons that you hear from students as to why they become disengaged?
i. Do you see any trends regarding engagement? Changes throughout the school year? Certain classes or grade levels?
j. How significant do you think student disengagement has been this year? Do you think student engagement will become more problematic as the school grows?

3. Closure
    a. Thank you for your participation!
    b. Here is how to get in touch with me.

Interview Schedule: K-12 Online Student Engagement

1. Establish rapport and establish the intent of the interview
    a. Gather information about the factors that inform low levels of student engagement in online learning
    b. Participation is voluntary
    c. No compensation is offered for participation
    d. Expected time frame: 30 min

2. Questions for Interview Participant: Academic Director
    a. What kind of structured professional development is provided to teachers to support them in teaching online? (workshops, courses, etc.)
    b. How often is structured professional development provided? What topics did the school cover this year? (workshops, courses, etc.)
    c. How does administration determine what structured professional development opportunities are going to be most useful to teachers?
    d. Other than structured professional development, what other ways are teachers supported to teach online?
    e. How much time do students spend in synchronous class time verses the work they are expected to complete independently outside of class time?
        i. How often do classes meet synchronously? Is this different for different grade levels or classes?
    f. How do teachers establish their presence within the online classroom- both regarding setting expectations and managing the classroom and regarding getting to know students?
    g. What are some of the strategies teachers use to create a community within their online classes? Do classrooms that seem to have more of a community seem to have any different outcomes in student performance?
    h. How do teachers facilitate interactions in the online classroom- both between the student and the teacher and between the students?

i. What are some of the common ways that teachers try to engage students in learning? How can you tell if these strategies are effective? Do you have a sense of why some students become disengaged?

j. Given that there is a high percentage of students receiving special education supports at this school, how do teachers differentiate and individualize instruction for students? Do these practices usually help to keep students interested and motivated?

3. Closure

k. Thank you for your participation!

l. Here is how to get in touch with me.

Focus Group Protocol for Evaluation of Teachers

1. Establish rapport and establish the intent of the focus group

- Participation is voluntary
- No compensation is offered for participation
- Expected time frame: 30 min

2. Questions:

- How prepared do you feel for involving learning coaches?
- What approaches to increasing learning coach involvement were you able to incorporate into your teaching practice?
- What approaches were you able to implement within your teaching group?

- How successful were the strategies you implemented? What will you try differently next time?
- What do you find most effective in soliciting learning coach involvement?
- In what ways do learning coaches most commonly support student learning?
- Were you satisfied or unsatisfied with the professional development focused on increasing learning coach involvement? Why?
- What aspects of the PD on increasing learning coach involvement were most useful?
- What additional topics would you like to have included in the remaining virtual PLC sessions?

3. Closure
    - Thank you for your participation!
    - Here is how to get in touch with me.

Appendix C

Needs Assessment Qualitative Data Code Book

Theme	Code	Sample Text	Data Source
Teacher Development	Professional development	"…we were bombarded when we first started with a ton of professional development and it had very little meaning…we had this immense amount of training but nothing to apply it to until two or three weeks later and by then I mean you're just kind of trying to muddle through."	Teacher
		"sometimes the professional development does not seem appropriate for my grade level"	Teacher
		"About every other week or so that we'll have that hour in there" (referring to the professional development schedule for teachers)	Academic Director (AD)
		"It's very tough because most of our teachers are new so there's only a handful of mentors. There's about eight mentees to a mentor."	AD
	Best Practices	"[sponsoring organization] have an entire department right now that's dedicated to examining those best practices… it's a combination of what are the best practices out there but mostly, since there's limited research on what is really best practice in the cyber environment, it's bee let's reference the materials that exist in terms of best practice and let's see how it's transferred."	AD
		"So there is a whole guiding rubric of best practices instruction that's focused on online instruction"	AD
	New School	"Initially, the struggles that we have were… some gaps where we didn't	Student Services

Theme	Code	Sample Text	Data Source
		have people in those positions… it was sort of all hands on deck."	Coordinator (SSC)
		"And whereas last year we were just kind of learning and new, and there were just things we didn't know and we didn't know that we didn't know them"	SSC
		"we don't have very structured pacing guides and curriculum maps yet, we we're kind of winging it to some extent…"	Teacher
		"And even being the school's first year, I think it's all still like we don't know. We have to figure this [laughter] out. Let's just figure it as we go, so."	Teacher
		"There's a lot of, here's the patch over until the real thing gets ready but then you need to go back…"	AD
Interactions	Communication challenges	"Many times and so it's just making sure that the adult, the parent, the guardian knows…"	SSC
		"We have had situations where people will pick up the phone and just hang up on staff members."	SSC
		"I have not had a lot of successful tricks for getting consistent communication with the parents"	Teacher
	Synchronous/ live sessions/ connect sessions	"if it was done right, about a third of their entire day would be spent in some type of live instruction or help…"	AD
		"some students really prefer to just get their direct instruction live from the teacher"	AD
		"They'll hop on the camera, many of them. They're on the microphone, and	AD

Theme	Code	Sample Text	Data Source
		they're asking for your interactive feedback."	
		"Those students generally don't have the opportunity to have those negative interactions that happen in the brick and mortar."	AD
Student Engagement	Task completion/ student accountability	"And they may not understand that virtually means you're going to have to be highly independent in completing your work."	SSC
		"if you leave for the day, you better believe he's not going to do his work if he's been avoiding it all along."	SSC
		"So some kids, that really is helpful for, I think, just being held accountable. Like, the teacher actually seeing what they're working on"	Teacher
		"But I mean, how do you know if they mastered what they've actually done or somebody is just sitting there and telling them what the answers to pick up on a test? I don't know.	Teacher
		"I don't know how much of that is them truly completing the work and mastering it and how much of it is just a learning coach kind of clicking through and marking things complete. Or I know a lot of the fifth graders have told me, 'Oh, yeah, I just marked that complete myself.' They have their parents username and password for the OLS…"	Teacher
	Participation/ Attendance/ truancy	"no work completed and no communication with team members for… three days"	SSC
		"middle school can be hit or miss, but I think I can see the personalities come	AD

Theme	Code	Sample Text	Data Source
		through and how they respond, and that sore of dovetails with their class attendance and grades as well.	
		"…where you've got little checks of understanding so you know that there's going to be some interaction going on, the teacher's friendly, they're able to change their intonation of their voice, they're able to bring that personality through the screen here. Those are the classes where you're going to get higher participation, generally better grades, students a lot more willing to participate."	AD
		"there are groups of kids that largely go MIA and never truly engage"	AD
	School Choice	"So if I'm in a situation where maybe my local school is horrible or it's very far, those may be the primary reasons why I sign up for the school. Just those base level needs."	SSC
		"And I think a lot of them just kind of rush into the whole cyber school thing because they need something else without really taking into consideration the amount of work that ends up falling on the parent too"	Teacher
		"[strategies for student success] it's harder to say as the students get older because they come to use with- baggage is not the great way to- experiences that may or may not have been positive."	AD
		"So we'll get people who come here and they're just trying to maintain their SNAP or social security benefits or something like that. And that's just a vehicle. So they have very limited intentions to actually passing their	AD

Theme	Code	Sample Text	Data Source
		classes. They're just trying to survive…"	
Family Involvement	Lack of support from parent/ learning coach	"I have very few learning coaches that are working with their students during live classes and in our independent lessons"	Teacher
		"and then you have to think about the learning coach support at home… there's a good number who have no computer and no internet and no internet skills. So they get here and they just become overwhelmed and they just shut down."	AD
		"I don't believe that the families understand exactly what it takes to function in a virtual environment. And I don' t think they're as prepared as they might think they are."	SSC
		"…by the time you get to sixth, seventh grade most of those kids are left home alone and on their own. It's up to them to actually log in, and nobody's checking on them…while the teacher plays a significant component, it's often about the home situation…"	AD
		"But it's about the will of the family to say, 'We're here. We want to engage."	AD
Teacher Responsibility	Control	"we don't have any control over what content is in their online lessons. But what I present during my live classes, I can completely control however I see fit."	Teacher
		"I love cyber school [laughter]. I like the atmosphere better than brick-and-mortar, just because it's like there's	Teacher

Theme	Code	Sample Text	Data Source
		more I can't control. It's less stressful. I don't know [laughter]"	
		"I can't control how many kids end up on my online lessons… now it's kind of like, 'Well, I'll do the best I can but it's out of my control."	Teacher
	Attending to Students	"…the teacher would be the first line of defense…"	SSC
		"And if someone's not logging in or someone's not following up, and they know, 'Wow, this school's paying attention…'"	SSC
		"If the kid's not showing up, you're not answering the call, we'll do a welfare check"	SSC
	Relationships	"Sometimes [teachers] are like, 'All right, I have a good relationship with this student. I'm going to put a little two week plan together to get them back up to speed."	SSC
		"…we have to make sure our teachers get that they have to reach people where they are…"	SSC
		"I have a personal connection with a lot of students. But the ones who just kind of have a wall up, I don't know enough about them to make the lessons necessarily more meaningful to them so that they're more engaged"	teacher

Appendix D

Process and Outcome Evaluation Data Collection Matrix

Research Question	Construct/ Indicator	Data Source	Data Collection Tool	Frequency	Analysis
RQ1: To what extent was the PD to increase LC involvement implemented as intended?	Fidelity of Implementation-Adherence (Dusenbury et al., 2003)	Researcher	PD plans, researcher reflection notes	At the end of each session the researcher will note content that was not included or added to the PD session	Document analysis and comparison of plans and reflection notes
RQ2: What are teachers experiences with the PD to increase LC involvement?	Teacher Response	Teachers	QUANT: Impact of Teacher Professional Development (ITPD) Questionnaire-items 1-4 (McChesney & Aldridge, 2018)	Once, after delivery of the face-to-face professional development in Nov.	QUAN: Descriptive Statistics
			QUAL: focus group or interview focus on teacher reaction, satisfaction, and usefulness of PD	Once during study-after the first division specific PLC	QUAL: Inductive coding and thematic analysis
RQ3: In what ways have teachers augmented their practices to increase LC involvement after participating in PD to increase LC involvement?	Teacher practices	Teachers	QUAN: Teacher Report of Invitations to Parents (Learning Coaches) (Hoover-Dempsey et al., 2002)	Twice as a pretest and posttest measure at the start and conclusion of the intervention	QUAN: Comparative analysis
			QUAN: Impact of Teacher Professional Development (ITPD) Questionnaire-items 5-10 (McChesney & Aldridge, 2018)	Once at the conclusion of the intervention	QUAN: Descriptive Statistics
			QUAL: focus group regarding preparation to involve learning coaches,	Once during study-after the first	QUAL: Inductive coding and thematic analysis

Research Question	Construct/ Indicator	Data Source	Data Collection Tool	Frequency	Analysis
			changes in teacher practices, strategies implemented	division specific PLC	
			QUAL: open ended questions for teachers	Once at the conclusion of the intervention	QUAL: Inductive coding and thematic analysis
RQ4: How do the interactions between teachers and LC change after teachers' participation in the PD to increase LC involvement?	Teacher- LC interactions	Learning Coaches	QUAL: open ended questions: Have the interactions with teachers changed throughout this school year? How? In what ways did your students' teacher(s) help you to actively engage with your online student? Under what circumstances do you reach out to your students' teacher(s)? How receptive are your students' teacher(s) when you reach out to them?	Once at the conclusion of the intervention	QUAL: Inductive coding and thematic analysis, quantitizing the qualitative data
		Teachers	QUAL: focus group questions regarding teacher interactions with LCs	Once during study- after the first division specific PLC	QUAL: Inductive coding and thematic analysis, quantitizing the qualitative data

Appendix E

Focus Group Protocol for Evaluation of Teachers

Establish rapport and establish the intent of the focus group.

Researcher will read:

You are being asked to take part in a research study which is part of my dissertation at Johns Hopkins University. The purpose of the research study is to investigate the relationship between professional development for teachers focused on increasing learning coach involvement and changes in teachers' practices for involving learning coaches.

You are a volunteer. If you join the study, you can change your mind later. There will be no penalty or loss of benefits if you decide to quit the study. No compensation is offered for participation.

This focus group is expected to last 30-45 minutes. As part of this research, we are requesting your permission to create and use audio recordings. Any audio recordings will not be used for advertising or non-study related purposes. Pseudonyms will be used to protect the confidentiality of participants. If you do not wish to be audio recorded, please indicate this now so that I can take notes instead of creating an audio recording.

Thank you, now let's get started!

Questions:

a. What were some of the strategies regarding increasing Learning Coach (LC) involvement that were delivered during PD sessions?
b. What strategies were you able to implement in your classroom or within your teaching group?
c. How successful were the strategies you implemented? How have you refined this approach, and what will you do differently next time?
d. Will you continue to use the strategies you have tried this year to increase LC participation moving forward? Why or why not?

e. Describe some examples of your experiences and interactions with LCs over the past year.

f. Have your interactions with LCs changed throughout this year? If so, how have they changed? Why do you think they did? If not, why do you think your interactions did not change? What has contributed to better interactions? What possible barriers remain?

g. Do you find that LCs tend to respond more readily to certain types of interactions or communications? If so, what types of interactions or communications are most effective in involving LCs?

h. Think of a LC with whom you have regular and positive interactions. What about that relationship seems to be working?

i. Think of a LC with whom you have tried or wish to have better interactions. What about the relationship has been challenging? What might you do in the future to improve the quality of the interactions?

j. Were you satisfied or unsatisfied with the PD focused on increasing LC involvement? Why?

k. What aspects of the PD on increasing learning coach involvement were most useful to you?

l. What additional topics would you like to have included in the rest of the PD focused on increasing LC involvement?

Closure

m. Thank you for your participation!

n. Here is how to get in touch with me.

Appendix F

Teacher Recruitment Email Letter

Study Title: Cultivating Student Engagement in K-12 Online Classrooms through Learning Coach Involvement Study
Student Researcher: Aviva B. Moore, Johns Hopkins University
Primary Investigator: Dr. Karen Karp, Johns Hopkins University

Dear Faculty,

This year you will be participating in professional development specifically designed to support learning coach engagement and involvement in their student's learning. In the three-legged model this school relies upon, active involvement from learning coaches is essential for student success.

Although your participation in the PD is required by the school, I am asking you to participate in a research study investigating the effectiveness of the professional development series. We would like to capture your impressions and insights about how to best work with learning coaches. All teachers are being asked to provide feedback on three brief surveys during the administration of the professional development series, in addition to participating in three online surveys (15-20 minutes). The first survey will occur at the beginning of the school year, one in November, and the final one in the spring.

Here is a link to the first survey. The first question requests your agreement to participate in this research study. Participation is voluntary, you can stop at any time, and all survey responses will anonymous and kept confidential.

I know that your time is valuable. Please know that I appreciate your participation. Feel free to contact me if you have any questions or concerns at amoore91@jhu.edu.

Thank you,

Aviva B. Moore
Johns Hopkins University
Amoore91@jhu.edu

Appendix G

Learning Coach Recruitment Email Letter

Study Title: Cultivating Student Engagement in K-12 Online Classrooms through Learning Coach Involvement Study
Student Researcher: Aviva B. Moore, Johns Hopkins University
Primary Investigator: Dr. Karen Karp, Johns Hopkins University

Dear Learning Coach,

You are being asked to participate in a research study investigating the level of engagement and involvement of learning coaches at Insight Cyber Charter School. All learning coaches are being asked to participate in two online surveys, one at the beginning of the school year and one in the spring. Each survey should take no more than 15- 20 minutes to complete. We value your thinking about our work at the school.

Here is a link to the first survey. The first question indicates your agreement to participate in this research study. Participation is voluntary, you can stop at any time, and all survey responses will be kept anonymous and confidential.

I know that your time is valuable. Please know that I appreciate your participation. Feel free to contact me if you have any questions or concerns at amoore91@jhu.edu.

Thank you,

Aviva B. Moore
Johns Hopkins University
Amoore91@jhu.edu

Appendix H

Teacher Pretest Survey

Thank you for your participation. This survey will take approximately 10-15 minutes to complete. By completing this survey or questionnaire, you are consenting to be in this research study. Your participation is voluntary and you can stop at any time.

Agree Disagree

This first section of this questionnaire focuses on your invitations to involving learning coaches. In this section, please indicate HOW OFTEN *YOU* have done each of the following this year.

Teacher Report of Invitations to Learning Coach Involvement

	Never	Once this year	Once each semester	Once a month	Once every 1-2 weeks	1+ time(s) each week
1. Have a conference with a learning coach?	1	2	3	4	5	6
2. Contact a learning coach if the child has problems or experiences failure.	1	2	3	4	5	6
3. Contact a learning coach if the child does something well or improves	1	2	3	4	5	6
4. Involve a learning coach as a volunteer in my virtual classroom.	1	2	3	4	5	6
5. Tell a learning coach about the skills the child must learn in each subject I teach.	1	2	3	4	5	6
6. Provide specific activities for a learning coach to do with the child in order to improve the child's performance	1	2	3	4	5	6
7. Assign homework that requires a learning coach to interact with the child.	1	2	3	4	5	6
8. Suggest ways to practice spelling or other skills to home before a test.	1	2	3	4	5	6
9. Ask a learning coach to listen to the child read.	1	2	3	4	5	6
10. Ask a learning coach to help the child with homework.	1	2	3	4	5	6
11. Encourage a learning coach to ask the child about what they are learning in their virtual classes.	1	2	3	4	5	6
12. Ask a learning coach to visit my virtual classes.	1	2	3	4	5	6
13. Ask a learning coach to take the child to the library or community events.	1	2	3	4	5	6

14. Give a learning coach ideas to help him or her become an effective advocate for the child.	1	2	3	4	5	6
15. Send home 'letters' telling learning coach what the children have been learning and doing in class.	1	2	3	4	5	6

This next section of questions is about your background.

16. What is your age?

20-29 years
30-34 years
35-39 years
40-44 years
45-49 years
50-54 years
55-59 years
60 or over

17. What is the gender you most identify with?
Male
Female
Non gender conforming
Other
I would prefer not to answer

18. What would describe you best?
Black/ African American
Asian/ Pacific Islander
Native American
Hispanic/ Latino
White
Other

19. What is the highest level of education you have completed?
Bachelor's degree
Master's degree
Doctoral degree
Other

20. When did you start working at this school?
Starting this 2019-2020 school year
Started between February- June, 2019
Started in or before January of 2018-2019 school year

Started in the 2017-2018 school year

Appendix I

Teacher Posttest Survey

Thank you for your participation. This survey will take approximately 10-15 minutes to complete. By completing this survey or questionnaire, you are consenting to be in this research study. Your participation is voluntary and you can stop at any time.

Agree Disagree

This first section of this questionnaire focuses on your invitations to involving learning coaches. In this section, please indicate HOW OFTEN *YOU* have done each of the following this year.

Teacher Report of Invitations to Learning Coach Involvement

	Never	Once this year	Once each semester	Once a month	Once every 1-2 weeks	1+ time(s) each week
1. Have a conference with a learning coach?	1	2	3	4	5	6
2. Contact a learning coach if the child has problems or experiences failure.	1	2	3	4	5	6
3. Contact a learning coach if the child does something well or improves	1	2	3	4	5	6
4. Involve a learning coach as a volunteer in my virtual classroom.	1	2	3	4	5	6
5. Tell a learning coach about the skills the child must learn in each subject I teach.	1	2	3	4	5	6
6. Provide specific activities for a learning coach to do with the child in order to improve the child's performance	1	2	3	4	5	6
7. Assign homework that requires a learning coach to interact with the child.	1	2	3	4	5	6
8. Suggest ways to practice spelling or other skills to home before a test.	1	2	3	4	5	6
9. Ask a learning coach to listen to the child read.	1	2	3	4	5	6
10. Ask a learning coach to help the child with homework.	1	2	3	4	5	6
11. Encourage a learning coach to ask the child about what they are learning in their virtual classes.	1	2	3	4	5	6
12. Ask a learning coach to visit my virtual classes.	1	2	3	4	5	6
13. Ask a learning coach to take the child to the library or community events.	1	2	3	4	5	6

14. Give a learning coach ideas to help him or her become an effective advocate for the child.	1	2	3	4	5	6
15. Send home 'letters' telling learning coach what the children have been learning and doing in class.	1	2	3	4	5	6

This next section focuses on the teacher learning and outcomes from the professional development focused on increasing learning coach involvement.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
16. As a result of this professional development, I know substantially more than I did before.	1	2	3	4	5
17. I have learned a lot of new things from this professional development.	1	2	3	4	5
18. In my daily classroom practice, I often apply what I learned from this professional outcomes development.	1	2	3	4	5
19. I successfully apply the content of this professional development in my daily classroom practice.	1	2	3	4	5
20. As a result of this professional development, my students' learning has improved.	1	2	3	4	5
21. My students have benefited from me receiving this professional development.	1	2	3	4	5

How prepared do you feel for involving learning coaches?

In what ways do you invite learning coach involvement?

In what ways do learning coaches most commonly help you to support student learning?

Thank you for your participation!

Appendix J

Mid-Intervention Survey

Thank you for your participation. This survey will take approximately 5-7 minutes to complete. By completing this survey or questionnaire, you are consenting to be in this research study. Your participation is voluntary and you can stop at any time.

Agree Disagree

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I have positive memories of this professional development.	1	2	3	4	5
I enjoyed this professional development very much.	1	2	3	4	5
This professional development has been very beneficial to my teaching.	1	2	3	4	5
Participating in this kind of professional development is very useful for my teaching.	1	2	3	4	5

Would you be interested in participating in a follow up interview or focus group to discuss the PD focused on increasing LC involvement? If so, please include your name and contact information.

Appendix K

Learning Coach Survey

Thank you for your participation. This survey will take approximately 10-15 minutes to complete. By completing this survey or questionnaire, you are consenting to be in this research study. Your participation is voluntary and you can stop at any time.

Agree Disagree

1. Have the interactions with teachers changed throughout this school year? How?
2. In what ways did your students' teacher help you to actively engage with your online student?
3. Under what circumstances do you reach out to your students' teacher(s)?
4. How receptive are your students' teacher (s) when you reach out to them?

Thank you for your participation!

Appendix L

Objectives and activities for PD sessions

Date	Objective	Activities
8a-12p August 20, 2019	New Teaching Staff only- - Define the roles and responsibilities of learning coaches, teachers, and other student-focused personnel - Identify the appropriate resources and personnel to support individual learning coach and student needs - Articulate how a learning coach facilitates student understanding and progress - Explain the characteristics and functions of the learning coach and teacher relationship in the online learning model - Explain basic interpersonal communication concepts that support the development of positive learning coach-teacher relationships - Select and apply the appropriate method of communication for a given situation - Apply strategies to establish a constructive learning coach and teacher relationship - Identify potential areas of conflict or difference between the learning coach and teacher, and articulate strategies that support positive outcomes - Describe key strategies to nurture a positive relationship in an online environment - Use tools and techniques to manage information supporting learning coach, teacher, and student interactions - Analyze common challenges faced by learning coaches to identify potential solutions	- Facilitator introduction- who I am, my research, my PD focus - Intro activity- get to know your neighbor: What are you most excited about with starting at this school? What were your previous experiences with parents like? - Facilitator presentation - Periodic knowledge checks- multiple choice questions- answer by moving to a designated table. Discuss at each table why they believe their answer to be correct, share with larger group - Practice introductory phone conversations and email communications - Re-engaging a learning coach voice mail activity- how would you respond? - Case studies situations to practice responses as well as reflective practices

1p-4p August 21, 2019	- Intro - Learning Coach Expert Panel - Reinforce importance of learning coach involvement as central to student success - Analyze obstacles for learning coach involvement experiences - Build on prior knowledge from traditional brick and mortar school experiences with parents - Analyze strengths of positive parental involvement experiences	- Facilitator introduction- who I am, my research, my PD focus - pairing returning staff with new staff- new staff share 2-3 things they learned the day before, returning staff share 2-3 strategies they have found most effective; share within the larger group - reflection on expert panel- what surprised you? What was most helpful? What did you learn? - Facilitator presentation reinforcing the highlights from the previous day's session regarding the importance of learning coach involvement, outline the importance of learning coach engagement and the effect that it can have on student engagement - Read statements related to teacher beliefs regarding learning coach involvement, and have teachers answer by getting up and moving to the "yes", "no", "maybe", or "unsure" areas of the room. Sample questions include, "Engaging learning coaches early in the school year is important." "Once a learning coach becomes disengaged it is impossible to get them involved again." After each question, each small group will discuss why they chose their answer and will share with everyone. Final questions will relate to teacher self-efficacy (for example, "I am uncertain how to work with learning coaches to support student success."). - small group brainstorm of best and worst experiences with parental/ learning coach involvement in traditional brick and

	- Identify solutions for problem-oriented obstacles - Outline existing and new strategies for teachers to individually solicit support from learning coaches	mortar schools and online classrooms; share 1 experience per group with larger group - large group brainstorm: the best part of positive experiences and interactions with parents. What has made the relationships successful? How did this influence student success? How does this make you feel as a teacher? - Problem-solution scenarios- each person at a table is given a card with a different problem related to involving learning coaches (each table will have the same problem and solution cards). Numbered solution cards and blank cards are given as well. Each small group discusses each problem and records the solution number for each problem, as well as any additional solutions they can create. After solutions for each problem are discussed, groups will be restructured so that all those with problem one are together, etc. to discuss the solutions and possible new solutions. A representative from each group shares the problem and at least one viable solution. All solutions for each group are collected, recorded, and shared with teaching staff. - ACTON ITEM- try implementing a strategy that is new to you- either from the provided options or your idea- write down your name and the strategy you will try before the conclusion of the PD session
3-4p, November 6th (Virtually)	- Family and Community Involvement	- What we know about family and community involvement already - Redefining terms, clarifying roles and responsibilities, - Outlining the 6 keys to family, school, and community partnerships (Epstein et al, 2019) - Reviewing relevance in an online setting, set up for next session

Two 1-hour sessions November 8, 2019	- Discuss and review success and challenges with implementation of new strategies from previous PD session - Analyze options for innovative division specific practices to increase learning coach involvement- -	- In small groups, discuss how implementing the new strategy in your classroom went- what went according to plan? What changed unexpectedly? - Brainstorm and discuss revisions, alterations, changes to address challenges in implementing new strategies - First each group write one success when implementing a new strategy on top of large page and post on walls. In small groups do a gallery walk to add their similar experiences to the lists of successes; review as a large group the most common successes - Repeat for challenges in implementing new strategies - Discuss as a larger group the top three most common challenges - Put up a new page next to each problem for solutions. - In pairs, have teachers walk around to each problem, discuss solutions, and write up a solution to the list; review as a larger group the most viable solutions to common problems, and discuss the problems that do not have readily available solutions - Discuss and brainstorm ways that departments can invite learning coach involvement- start with traditional brick and mortar examples to create the list: open house, newsletter, Math/ Sci fair, wax museum, Back to School Night, Winter/Spring Concert, etc. - Discuss in small groups how to modify some traditional brick and mortar school activities to be appropriate to implement in online setting. Have groups write up their ideas on large paper and post in front of the room. - Within content division groups develop a plan for implementing a new departmental approach to invite learning coach involvement

		o Decide what the team will try. o Discuss how this will be implemented- what role will each person have? How will you encourage learning coaches to participate/ attend? When and how will this occur? What resources to you need and how will you make/ get them? - Share ideas with the group and solicit peer feedback to plans prior to initiating
1-hour PLCs- December 2019- March, 2020	- Discuss implementation and refinement of small group efforts to increase learning coach involvement - Discuss ongoing efforts to refine communications, work with hard to reach learning coaches, and develop teaching practices that invite involvement	All Staff: - First session: 2-3 small group departments share what they are trying to implement to increase learning coach involvement, solicit feedback. Each group will have 3-5 min. "poster session" - Share template for collaboration- outline goals, objectives, when it will happen, who is responsible, and what platform will be used Division Specific: - Review expectations for using shared template - Break into small group break out rooms for work time o Debrief strengths and challenges with implementing the strategy for increasing learning coach engagement. o Discuss how to address challenges to refine the program Discuss next efforts as individual teachers and a department in increasing learning coach involvement: What will you do differently in the next two weeks to change your family and community engagement efforts as a result of this work together? Final Session: All Staff - Virtual poster board session

Appendix M

Teacher Focus Group Code Book

Theme	Code	Quote
Building Community	Communicating frequently	"I now also send out an English newsletter each week, so that at least my parents have an email or something from me every week" (Teacher 3) "I do my weekly Flipgrid updates..." (Teacher 1) "I go through my rosters every week and compare attendance rates and I send out messages to my learning coaches…" (Teacher 1) "Personally, for me [interactions] haven't necessarily changed in tone but in frequency…" (Teacher 3) "we're constantly in communication" (Teacher 4)
	Increasing communications and interactions	"I've talked to more learning coaches personally in the first half of this year than I did all of last year" (Teacher 3) "I've been working more on getting to know them and letting them get to know me. And that has kind of made all the difference." (Teacher 3) "the parents are feeling more comfortable to reach out" (Teacher 4) "we have parent-teacher conferences this week, and I have 37 out of 40 learning coaches who have attended which was a huge amount compared to last year." (Teacher 4) "I think we are reaching them better this year compared to last year" (Teacher 2)
	Real relationships	"two-way contact helps to actually build like a real relationship." (Teacher 1) "I've been working more on getting to know them and letting them get to know me. And that has kind of made all the difference." (Teacher 3) "I take notes now on personal things that parents have told us or kids have told us, like their favorite sport or their favorite music, to try and make it much more obvious that I know them." (Teacher 3) "Getting over that hump where they understand that no, we're not out to get them, we want to help, is what really changes the relationship' (Teacher 4) "I'm on your side. We're a team." (Teacher 1) "we know what's going on in each other's lives at this point because we talk a lot." (Teacher 1)
	Teacher Collaboration	"brainstorming with other teachers was useful." (Teacher 2) "I think at least a little collaborative time is always good." (Teacher 3) "I think with actually having time during the day to work in our groups like we had yesterday, I think that that was a lot more effective for us" (Teacher 1)

Theme	Code	Quote
		"Just a chance for us to all be able to talk together as teams, but then as a whole elementary too" (Teacher 1) "I joined kind of a network of other cyber teachers where they just, literally, just in the last two months started sharing these sorts of things" (Teacher 1)
Challenges in working with learning coaches	Absent learning coaches	"Because it's often really difficult at the high school level to actually get learning coaches to attend things" (Teacher 1) "like I said, high school, a lot of time they're home by themselves during the day." (Teacher 1) "I don't think I'll ever get a hold of some." (Teacher 2) "I teach first grade… they're expected to be with their kids the whole time. And, unfortunately, that is typically not what happens, which is sad, because a six or seven-year-old, they can't use a computer on their own. They need an adult there." (Teacher 4) "Email, my families rarely respond to email." (Teacher 1) "I agree with the plain emails- never been ignored more!" (Teacher 3)
	Difficult learning coach interactions	"I get really tired of yelling at learning coaches." (Teacher 4) "learning coaches are on the defense constantly and are taking offense to everything… they are just being defensive about everything.' (Teacher 4) "Because it's so easy to get emails from people who just seem like they're attacking you..." (Teacher 1) "I've called, people have picked up, and once I say who I am, they hang up." (Teacher 1) "[I] show her the documentation that here's her grades, and here's her attendance, and what can we do to make this better? She is, I think, kind of living in some type of fantasy world where she says, "Well, my daughter says she has all A's and B's and she says she's going to class all day so I believe her. My child wouldn't lie to me. I don't care about all this paperwork you're sending me, you're making it up. I trust my daughter." And it's like, I don't know how to get past that. It's like, here's the cold, hard truth documented. But she's just delusional about it, so it's like, I have no idea how to get through to her." (Teacher 2)
	Sneaky Students	"learning coaches just are taking the kid's word for it sometimes about them attending" (Teacher 1) "I have a parent who no matter what I say or documents I show the about their student they say I'm making it up, they are passing all their classes, because their child would not lie to them" (Teacher 2) "They're crafty ones at the high school level. I have had some that tried to get around that by just logging in for like two minutes to the class, so that shows up on the report as attended." (Teacher 1)

Theme	Code	Quote
Learning Coach Engagement	Active engagement	"And we're going to do two different sessions. One in the afternoon, and then we're going to do one in the evening as well to try to get learning coaches to come to that, be more involved, and see what their kids are working." (Teacher 1) "we have parent-teacher conferences this week, and I have 37 out of 40 learning coaches who have attended which was a huge amount compared to last year." (Teacher 4) "You have your parents or LCs that are very engaged in their students' schoolwork and life more so than others. So no matter what we do, those LCs are going to be engaged with us." (Teacher 2) "And I actually get a lot of response from that" (Teacher 1) "now this time the learning coach has to answer" (Teacher 4)
	Passive engagement	"Whether it's the newsletters, the flip grid. And I think they're at least seeing it. They might not give us feedback on it very often" (Teacher 2) "I now also send out an English newsletter each week, so that at least my parents have an email or something from me every week" (Teacher 3) "I've had a few learning coaches tell me during phone conferences that they really like the newsletter" (Teacher 1)
	Variable	"I do think some of the things that we're doing as departments are kind of helping the middle-of-the-road LCs that are sometimes engaged, sometimes not." (Teacher 2)
Refining Practices	Teaching shifts	"But you in our live November PD talked a lot about being able to form real relationships with our parents, so I've been working more on getting to know them and letting them get to know me. And that has kind of made all the difference." (Teacher 3) "And this year, I really have changed the way I've thought about [live sessions] and, instead of it being a class connect session for the student, now it's a class connect session for both. And I expect learning coaches to answer" (Teacher 4) "I've changed a little bit my requirements and I'd say, 'Hey, if you're not logged in for at least 10 minutes of the actual class time or you have to be removed from the session, your learning coach is going to get a notice that you were MIA.'" (Teacher 1)
	New strategies	"We were brainstorming different things, and we decided on doing a gallery walk student showcase type thing with student work." (Teacher 1) "I've been working more on getting to know them and letting them get to know me. And that has kind of made all the difference." (Teacher 3) "We keep a Padlet going by team and by class" (Teacher 3) "Yeah, [Flipgrids] are new for me." (Teacher 1)

Theme	Code	Quote
		"So, the intelligent agents…automatically send them an email… and it just gives them a reminder of different assignments they are missing….I did not use them last school year but using them this year…" (Teacher 2) "it's almost like coaching for both the adult and the child" (Teacher 4)
	Using technology	"We keep a Padlet going by team and by class" (Teacher 3) "I do my weekly Flipgrid updates" (Teacher 1) "So, the intelligent agents…automatically send them an email… and it just gives them a reminder of different assignments they are missing." (Teacher 2) "Instead of it being a class connect session for the student, now it's a class connect session for both." (Teacher 4) "we aren't allowed to use texting systems for our learning coaches, but I know that they're working on changing that" (Teacher 1)
	Maintaining efforts	"Yeah, [Flipgrids] are new for me. I'll definitely keep doing those. I know that people get tired of reading emails, so seeing my face and making those funny videos I'll definitely keep doing that. I want to try to refine that a little bit next year and get learning coaches and students engaged" (Teacher 1) "So I think it's good, what we're doing, and we should continue to do it." (Teacher 2)
Classroom experiences	Level of control	"I don't think I'll ever get a hold of some." (Teacher 2) "But at the same time, I also think no matter what I do, if I work 24-hour-day cycles, I'm still not going to reach some of those LCs that are just checked out." (Teacher 2) "Okay, I'm going to keep trying. I'm going to keep calling even if you hang up on me every time." (Teacher 1)
	Overwhelmed	"Oh, my gosh. How are we going to add something else on there? … the solutions to try and reach learning coaches were to reach them outside of school hours. And we also were like, "Oh. And we're already working as long as we can." (Teacher 1) "…out of your 150, 200 students…" (Teacher 2) "I also think no matter what I do, if I work 24-hour-day cycles, I'm still not going to reach some of those LCs that are just checked out." (Teacher 2) "we're juggling so many things that sometimes it's hard to put aside time and remember to do other things" (Teacher 1) "it takes a while to go through and double check and send them (emails) all out" (Teacher 1)
	Keep trying	"I've sent many an email but I've also tried to call" (Teacher 1) "Okay, I'm going to keep trying. I'm going to keep calling even if you hang up on me every time." (Teacher 1) "I had sent them (emails) many, many times" (Teacher 1)

Theme	Code	Quote
		"I finally got a response and I've been sending them for like six months" (Teacher 1)
	Figuring out what works	"I did not use them (intelligent agents) last school year but using them this year, I've got a lot more student work in. Each LC is copied on that email that goes out to the students." (Teacher 2) "And so far, we've maintained better passing rates all year than we had last year. So, I think that that's definitely a positive change we've seen." (Teacher 1) "And just that small change of kind of how I'm looking at classes has really affected the participation." (Teacher 4)
	Comparable to a brick and mortar school	"so far this year it's very similar to when I was at a brick and mortar school." (Teacher 2)
Unexpected aspects of PD	PD Scheduling	"I think with actually having time during the day to work in our groups like we had yesterday, I think that that was a lot more effective for us and we definitely appreciated that… a lot more than taking a two-hour chunk and doing it at once. We like having it broken up into those Wednesday sessions. That helps us a lot." (Teacher 1) "I know with the PD in November, we were kind of-- we were a little bit taken aback, because we originally had received information saying that we would have time to work in departments on academic content. And then we didn't get to do that at all." (Teacher 1)
	Different Direction for PD	"I think that it kind of took me in a different direction than what I expected and maybe even some of my fellow elementary teammates. We really were thinking of fun ideas… they all are fantastic, but it made me wonder for me and for my class, knowing my students, am I starting too big? Does it need to be something small? … how can I get the people that aren't involved, involved? … And that's what caused me to lead me to look at the way I use my class connect sessions differently. So, I think that it was very beneficial, but it didn't end up the way I expected it to." (Teacher 4) "seeing examples of what other schools are doing that's working throughout the country" [would be helpful] (Teacher 4)
Benefits of PD	Satisfaction	"I've been satisfied." (Teacher 4) "I think at the high school level, we've been satisfied overall." (Teacher 1) "brainstorming with other teachers was useful." (Teacher 2)
	Collaboration	"I think at least a little collaborative time is always good." (Teacher 3) "I think with actually having time during the day to work in our groups like we had yesterday, I think that that was a lot more

Theme	Code	Quote
		effective for us and we definitely appreciated that, that we had that PLC we had yesterday, a lot more than taking a two-hour chunk and doing it at once. We like having it broken up into those Wednesday sessions. That helps us a lot." (Teacher 1)

Appendix N

Learning Coach Survey Code Book

Have the interactions with teachers changed throughout this school year? How?

Theme	Code	Quote
Lack of changes	"Consistent"	"teachers have been consistent with communicating with me" "Interactions with the teachers have been consistent" "Interaction has been consistent" "Been consistent, lots of contact." "Teachers and staff have been consistent in communication and support since we have started with the school." "I appreciate the interactions with teachers, it is consistent and thorough on a daily basis"
	"Same"	"Interactions are the same" "The same, positive" "No it's the same" "Uh it's has been the same they are very helpful and very active with us." "Everything still the same. The teachers are great." "The interactions with teachers have remained the same throughout this school year"
Positive Changes	"Better"	"Much better communication" "They always get better" "Yes, they went from great to even better." "they've gotten better and easier as the year goes on. We know the teachers better and they know my child better. Interactions have always been respectful and helpful, geared towards my child's success." "Better communication with teachers"
Negative Changes	COVID-19/ corona virus	"Covina 19 causing less class connects" "Well since the COVID-19 thing it has changed drastically" "They have been wonderful until COVID-19. Not having any OlS live classes really has my daughter feeling down." "W/ the caranovirus (sic) shutting down school, my student doesn't have "teacher time" however she is always available through email." "Yes due to the coronavirus they don't hold live classes but have office hours and still are there when she needs them" "Due to the coronavirus, we are not doing video (homeroom)" "Also, with the COVID-19 virus interaction with the teachers is at zero (0)."
	Little to no interaction	"when ever I call no one seem to return my call even after I leave a message"

		"now we have no interaction other than email" "We haven't had much interaction with teachers" "The staff are impossible to get in contact with. Most teachers do not respond to emails." "Haven't needed to interact with teachers." "I learned that the interaction with cyber school is not very personal and we are basically on our own"
	Decreases in communication	"Here lately, some of the teachers still have a quick response time while others do not respond at all." "At the beginning of the school year email replies were quick, however, I am having trouble with one teacher not responding to my emails. Also, with the COVID-19 virus interaction with the teachers is at zero (0)."
Inconsistent interactions	Variations in communication	"sometimes I can get communication but others I don't" "we do get communication from some teachers n some just ignore communication n get disrespected" "there is one or two teachers who do not ever respond to emails from student or parent which is aggravating" "Some teachers have been much better at keeping up with communications than others." "Here lately, some of the teachers still have a quick response time while others do not respond at all."
Positive Interactions	Communication	"Much better communication" "I always get a hold of them, or they contact me instead." "They have been great with calling and even a visit" "All of the teachers have gone out of their way to communicate and it is greatly appreciated. Every phone call was paired with an email" "Yes they are more open with the learning coaches and students when it comes to problem solving." "they go out of their way to contact you" "all teachers are still accessible, and easy to communicate with" "Communication is essential and I believe the teachers and staff have done an amazing job!" "Better communication with teachers"
	"Always" available	"they are always there to help" "they are always very open to talk and they always keep us informed." "Teachers are just so nice and always willing to help." "the teachers always are there when I need them." "their always there when she needs them." "the teachers are always available"
	Respond "quickly"	"staff are very dedicated and are quick to reply" "responding quickly when help is needed" "get the response right away"

		"the response time is usually very quick" "When I do have questions, the teachers get back to me as soon as they can." "quick response when needed" "I can email them and have a response very quickly." "all of the teachers would reply to my emails within 2-6 hours."
	Increased personal interactions	"More personal interaction and follow ups." "they've gotten better and easier as the year goes on. We know the teachers better and they know my child better. Interactions have always been respectful and helpful, geared towards my child's success." "they have changed to a more personal level. I find it easier to talk to my child's teacher(s) and support staff."
	Teacher Reponses	"any time i needed to speak to my daughters teacher she always responded to me." "teachers are very responsive" "they have always been responsive and caring anytime I contacted them." "I've always gotten responses from anyone I have reached out to."

In what ways did your students' teacher help you to actively engage with your online student?

Theme	Code	Quote
Lack of Teacher Support	No Support	"Current teacher has not initiated any activity to help be engaged with my student" "I engage with destiny because i choose to and want to nobody helps me do that" "They have not. I have been learning as I go along as far as what works best for my student"
	No Help	"others still ignore what im trying to say we need help on" "some we just got ignored" "I didn't need that help" "I have not asked for help" "I don't think they did help." "The teachers do not actively help me engage with my student"
Methods of Communication	Email	"sending me emails constantly to keep me informed" "Sending numerous email" "she also send links in her weekly emails" "All instructors sent weekly emails outlining weekly plan and coursework" "They email us about anything going on"

		"I received a significant amount of email traffic that allowed me to stay up-to-date with almost every class. There was fantastic communication via email."
	Phone Calls	"extending telephone calls" "The phone calls helped a lot" "Recently I have received some phone calls from teachers checking up in my daughter." "phone calls as needed"
	Additional methods	"Field trips" "Zoom daily meetings" "Office hours help" "I love the Facebook groups and the newsletters." "Doing the Flipgrid videos was a great idea" "one on one sessions with him" "Having parent teacher conferences" "arranged study groups and tutor sessions"
Supportive Interactions	Monitoring Student Progress	"They let you know what your child is behind and how they could help to bring him back on track" "We communicate often and helps me to keep up with her work" "They make sure I know how my son is doing. I also help him with anything that he may have issues understanding" "Keeping me aware of any missing assignments, giving information on office hours" "My student's teacher, presented the students with work that challenged them. This allowed for the learning coach to engage with the student and assist them while the teacher is advising the class." "Letting me know if my child hasn't logged in to a course, has a major assignment overdue, or has missed a class connect. That way I can find out why and get help where it's needed"
	Learning the System	"We spoke about how to navigate their different class pages, for assignments and grades." "Showed me how to use the online school" "Showing how to put in time and how to access the assignments and do live sessions"
	"Help"	"Always willing to help" "Also letting them know they are there if the need extra help" "everyone has been very helpful to help us navigate online school" "Office hours help" "Always helps when there are issues that arise with courses"

		"My students teacher has good input and differant (sic) ways of helping learning coach teach your student. Any question you have she always is there to help. she has very good feedback." "Any time I have a question they are very helpful" "teachers help with whatever we may need" "She has helped us through every problem we have ever had" "She gave me more info on how to help my daughter with boredom during certain classes. She answered any question I had"
	Questions	"They have made it clear to the student that it is ok to ask questions any question at anytime… Knowing this has made my student feel at ease talking freely to me or his teachers." "They listen to and answer any and all questions I have" "Answered any and all questions we had" "Any time I have a question they are very helpful"
	Encourage	"[she] encourages the children to make friends and be friendly with each other. Mika loves being in her class connects" "just very encouraging to us" "Encouragement" "To encourage him to complete all assignments in order to pass" "words of encouragement from so many staff members" "With assignments that were given encouraged interaction with LC and student in order to complete" "My son's teacher is very encouraging" "She gave me more info on how to help my daughter with boredom during certain classes. She answered any question I had"
	Motivate	"She motives us "
	"Fun"	"Science teacher made it fun" "She makes class connects fun which makes my child excited to learn" "By making it interesting and having fun classes"
	Tools and Strategies	"Provide ideas and tools for teaching strategies" "Stay connected" "Kits for labs and activities." "Teachers offered good links to received more help with math and reading so the student can get more practice" "Gave me ideas on how to get him to read more" "My students teacher has good input and differant (sic) ways of helping learning coach teach your student. Any

question you have she always is there to help. she has very good feedback."
"With assignments that were given encouraged interaction with LC and student in order to complete"
"They keep the content there and talk about it which makes us talk about it too"
"They gave me a better understanding of the curriculum"
"By providing the tools necessary for me to be able to assist my children with their learning"
"All different techniques"

Aviva B. Moore

Aviva earned her dual Bachelor of Art's degrees in English Literature and Environmental Studies from Washington University in St. Louis and her master's degree in Secondary Education at Saint Joseph's University. Her professional experience includes teaching Language Arts and Social Studies to middle school students, including becoming level 1 certified in Wilson Reading Systems while working with students with language-based learning differences. Additionally, she helped to open Pennsylvania's first independent school specifically designed for gifted learners and served as the only full-time administrator in the building for the first several years of operations. Aviva has also served on the Board of Directors of several schools, including the state-wide cyber charter school that serves as her context for her research in this program. Aviva spends her free time with her two teenage daughters and dogs Delilah and Bowie.